



CURRENT POPULATION REPORTS

Household Economic Studies

P70-43

**Dynamics of
Economic Well-Being:**

Health Insurance, 1991 to 1993

SIIPP

Survey of Income and Program Participation

by Robert L. Bennefield

U.S. Department of Commerce
Economics and Statistics Administration
BUREAU OF THE CENSUS

HIGHLIGHTS

(The figures in parentheses denote the 90-percent confidence intervals.)

- Estimates for the 1992 calendar year show that 18.1 (± 1.2) million persons were uninsured over that 12-month period. That estimate was not significantly different than the 1991 calendar year estimate of 17.4 (± 1.1) million uninsured persons. Nine point four (± 0.9) million were uninsured for the full 32-month period from early 1991 to mid-1993.
- Over calendar year 1992, 79.7 (± 0.7) percent of all persons had continuous health insurance coverage over the year; thus, 20.3 (± 0.7) percent, or 50.7 (± 1.8) million persons, lacked insurance for at least 1 month. This percentage was not significantly different from the 20.6 (± 0.7) percent who experienced a lapse in coverage over calendar year 1991.
- Over a 32-month period during 1991 to 1993, 73.5 (± 0.8) percent of all persons had continuous health insurance coverage; therefore, 26.5 (± 0.8) percent, or 64.0 (± 2.0) million persons, lacked insurance for at least 1 month.
- Young adults (those between the ages of 18 and 24 years old) were the most likely of any age group to lack insurance for at least 1 month. About one-half, or 48.1 (± 3.0) percent, of the persons of this age group lacked health insurance for at least 1 month during the 32-month period.
- Work experience has a significant effect on health insurance coverage. Eighty six point seven (± 1.4) percent of persons who worked full-time for the entire period were covered continuously by health insurance, compared with 72.5 (± 5.9) percent for full-period, part-time workers, and 59.9 (± 1.7) percent for workers with one or more job interruptions.
- Those who were poor or near poor were less likely to have continuous health insurance coverage than others. Eighty three point three (± 0.8) percent of those with an income-to-poverty ratio of 2.0 or greater had continuous coverage, compared to 50.3 (± 1.8) percent of those with an income-to-poverty ratio below 2.0.
- Twenty six point five (± 0.8) percent of all persons experienced at least one period of time without health insurance coverage during the 32-month survey period in 1991 to 1993. Of all observed spells without health insurance, half lasted for 7.1 months or longer. This estimate was significantly longer than the 6.0 months of noncoverage for the 1990 to 1992 period.

ACKNOWLEDGMENTS

This report was prepared under the general direction of **Kathleen Short**, Chief, Poverty and Wealth Statistics Branch, Housing and Household Economic Statistics Division. The tabulations of estimates in this report were programmed under the general direction of **Angela M. Feldman-Harkins**, Chief, Computer Programming and Applications Staff; **Caroline Carbaugh** programmed the tabulations on spells without health insurance coverage. Statistical assistance and word processing assistance were provided by **Jean Tash**.

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Sampling and estimation were performed by **Vicki Huggins**, Chief, Survey of Income and Program Participation Branch, Demographic Statistical Methods Division; **Tracy James** conducted the sampling review.

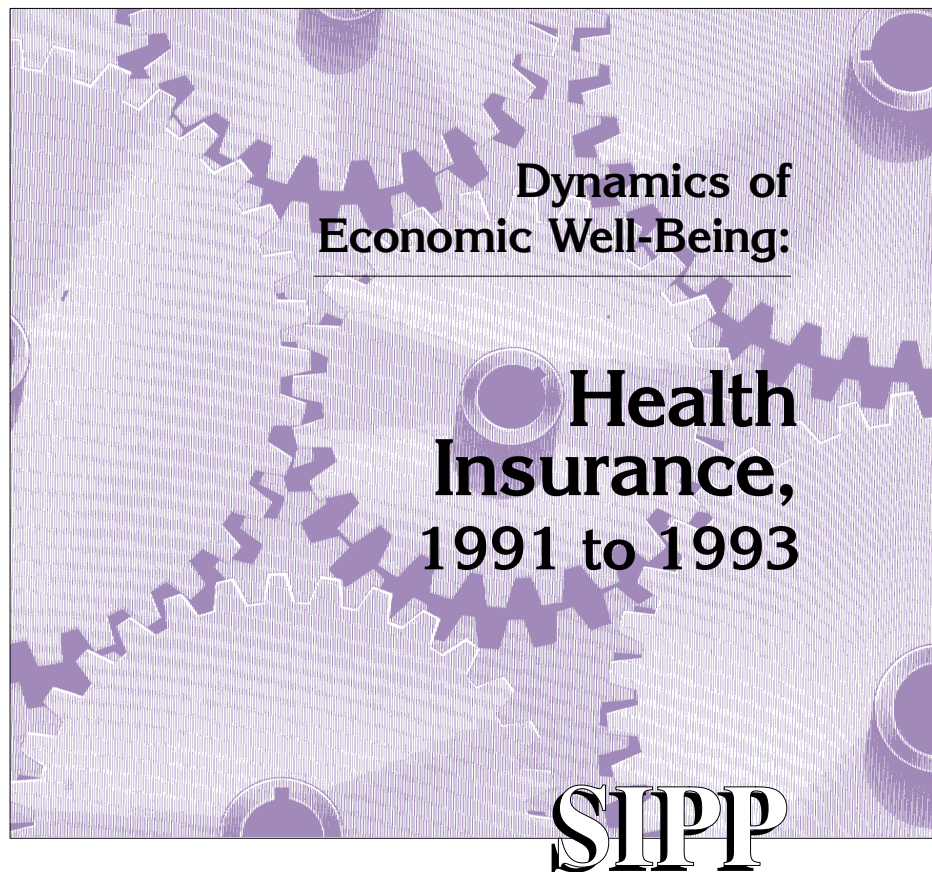
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Data collection activities were carried out by Bureau of the Census field representatives under the general direction of Field Division.

The staff of the Administrative and Publications Services Division, **Walter C. Odom**, Chief, performed publication planning, design, composition, editorial review, and printing planning and procurement. **Cynthia G. Brooks** provided publication coordination and editing.

CURRENT POPULATION REPORTS
Household Economic Studies

P70-43
Issued May 1995



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SUGGESTED CITATION

Bennefield, Robert L., *Dynamics of Economic Well-Being: Health Insurance, 1991 to 1993*
U.S. Bureau of the Census. Current Population Reports, P70-43
U.S. Government Printing Office, Washington, DC, 1995.

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–	Represents zero or rounds to zero.
(X)	Not applicable.
(B)	Base is less than 200,000.

Dynamics of Economic Well-Being: Health Insurance, 1991 to 1993

INTRODUCTION

This report uses data from the Survey of Income and Program Participation (SIPP) to examine issues related to health insurance coverage. It focuses primarily on the extent to which people are covered by health insurance over a 32-month period beginning in early 1991. The source of this information is the 1991 panel of the SIPP, which contains records for each survey person for whom a reasonably complete set of data for a 32-month period was obtained. Efforts were made during the life of the panel to follow persons that moved to ensure that the sample remained representative of the noninstitutional population of the United States.

It should be noted that longitudinal estimates presented here are based on persons who were interviewed in all waves¹ of the reference period or for whom imputed wave information exists.² Insofar as persons who left the panel were differentially covered by health insurance, estimates on months covered across the panel may be biased. Additionally, there may be a time-in-sample bias present in the longitudinal estimates.

All demographic surveys, including Current Population Survey (CPS) and SIPP, suffer from undercoverage of the population. This undercoverage results from missed housing units and missed persons within sample households. Compared to the level of the 1980 decennial census, overall CPS and SIPP undercoverage is about 7 percent. Undercoverage varies with age, sex, and race. For some groups, such as 20 to 24 year old Black males, the undercoverage is as high as about 27 percent. The weighting procedures used by the Census Bureau partially correct for the bias due to undercoverage. However, its final impact on estimates is unknown.

During each SIPP interview, information is collected on health insurance coverage (along with other information on income, labor force, and program participation) for each month in the 4-month reference period. It is, therefore, possible to classify persons by the number of

months over the 32-month period that the person was covered by one or more types of health insurance. It is also possible to measure the number of months continuously spent without insurance coverage; that is, spells of noncoverage.

Health insurance in this report refers to the following types of coverage:

1. Employer- or union-provided insurance
2. Other privately-purchased health insurance
3. Medicare
4. Military health care
5. Medicaid

HIGHLIGHTS

(The figures in parentheses denote the 90-percent confidence intervals.)

- Estimates for the 1992 calendar year show that 18.1 (± 1.2) million persons were uninsured over that 12-month period. That estimate was not significantly different than the 1991 calendar year estimate of 17.4 (± 1.1) million uninsured persons. Nine point four (± 0.9) million were uninsured for the full 32-month period from early 1991 to mid-1993.
- Over calendar year 1992, 79.7 (± 0.7) percent of all persons had continuous health insurance coverage over the year; thus, 20.3 (± 0.7) percent, or 50.7 (± 1.8) million persons, lacked insurance for at least 1 month. This percentage was not significantly different from the 20.6 (± 0.7) percent who experienced a lapse in coverage over calendar year 1991.
- Over a 32-month period during 1991 to 1993, 73.5 (± 0.8) percent of all persons had continuous health insurance coverage; therefore, 26.5 (± 0.8) percent, or 64.0 (± 2.0) million persons, lacked insurance for at least 1 month.
- Young adults (those between the ages of 18 and 24 years old) were the most likely of any age group to lack insurance for at least 1 month. About one-half, or 48.1 (± 3.0) percent, of the persons of this age group lacked health insurance for at least 1 month during the 32-month period.

¹Sample households within a given panel are divided into four subsamples of nearly equal size. These subsamples are called rotation groups and one rotation group is interviewed each month. In general, one cycle of four interviews covering the entire sample, using the same questionnaire, is called a wave.

²A "missing wave imputation" procedure was used for persons who missed an interview but had completed interviews before and after the missing wave. See appendix B.

Table A. **All Persons by Sex, Race, Hispanic Origin, and Health Insurance Coverage: Calendar Years 1991 and 1992 From the 1991 SIPP Panel**

Health insurance coverage	Both sexes	Male	Female	White		Black	Hispanic origin ¹	Not of Hispanic origin
				Total	Not of Hispanic origin			
	1992 CALENDAR YEAR							
All persons (in thousands)	250 020 (100.0)	121 572 (100.0)	128 448 (100.0)	208 483 (100.0)	188 798 (100.0)	31 237 (100.0)	24 442 (100.0)	225 578 (100.0)
Percent covered by private or government health insurance:								
Less than 12 months	20.3	22.0	18.6	18.9	16.3	27.9	41.4	18.0
No months	7.2	8.4	6.2	6.8	5.7	9.9	15.5	6.4
1 to 11 months	13.0	13.7	12.4	12.1	10.6	18.0	25.9	11.6
1 to 4 months	4.2	4.5	3.9	3.9	3.2	5.2	10.2	3.6
5 to 8 months	4.9	5.1	4.7	4.6	4.0	6.8	9.8	4.3
9 to 11 months	4.0	4.1	3.8	3.7	3.4	6.0	6.0	3.7
12 months	79.7	78.0	81.4	81.1	83.7	72.1	58.6	82.0
1 to 12 months	92.8	91.6	93.8	93.2	94.3	90.1	84.5	93.6
Percent covered by private health insurance:								
Less than 12 months	31.2	31.1	31.3	27.7	24.3	52.7	58.9	28.2
No months	17.2	16.6	17.9	14.6	12.1	33.7	37.5	15.0
1 to 11 months	14.0	14.5	13.4	13.1	12.2	19.0	21.4	13.2
1 to 4 months	5.1	5.4	4.9	4.6	4.0	7.3	10.2	4.6
5 to 8 months	5.2	5.3	5.0	5.0	4.8	6.7	7.1	5.0
9 to 11 months	3.6	3.8	3.5	3.5	3.4	5.0	4.1	3.6
12 months	68.8	68.9	68.7	72.3	75.7	47.3	41.1	71.8
1 to 12 months	82.8	83.4	82.1	85.4	87.9	66.3	62.5	85.0
Percent covered by medicaid:								
Less than 12 months	93.1	94.8	91.5	95.0	96.0	81.3	85.9	93.9
No months	87.8	90.4	85.4	90.5	92.2	70.8	74.0	89.3
1 to 11 months	5.3	4.4	6.0	4.5	3.7	10.5	12.0	4.5
1 to 4 months	2.4	2.0	2.8	2.2	1.8	4.1	5.4	2.1
5 to 8 months	1.8	1.4	2.0	1.5	1.2	3.6	4.1	1.5
9 to 11 months	1.1	1.0	1.2	0.9	0.7	2.7	2.5	1.0
12 months	6.9	5.2	8.5	5.0	4.0	18.7	14.1	6.1
1 to 12 months	12.2	9.6	14.6	9.5	7.8	29.2	26.0	10.7
	1991 CALENDAR YEAR							
All persons (in thousands)	247 187 (100.0)	120 193 (100.0)	126 994 (100.0)	205 820 (100.0)	187 357 (100.0)	30 878 (100.0)	22 885 (100.0)	224 301 (100.0)
Percent covered by private or government health insurance:								
Less than 12 months	20.6	22.6	18.7	18.8	16.3	29.9	41.8	18.4
No months	7.0	8.0	6.1	6.6	5.5	8.8	15.6	6.1
1 to 11 months	13.6	14.6	12.5	12.2	10.8	21.1	26.2	12.3
1 to 4 months	4.1	4.5	3.6	3.6	3.1	6.0	9.2	3.5
5 to 8 months	5.2	5.9	4.6	4.6	4.0	8.8	10.5	4.7
9 to 11 months	4.3	4.2	4.3	4.0	3.7	6.4	6.5	4.0
12 months	79.4	77.4	81.3	81.2	83.7	70.1	58.2	81.6
1 to 12 months	93.0	92.0	93.9	93.4	94.5	91.2	84.4	93.9
Percent covered by private health insurance:								
Less than 12 months	31.0	31.2	30.8	27.1	23.8	53.6	59.4	28.1
No months	16.6	15.9	17.2	14.1	11.6	31.5	36.7	14.5
1 to 11 months	14.4	15.3	13.6	13.0	12.2	22.1	22.7	13.6
1 to 4 months	4.9	5.2	4.7	4.2	3.8	8.8	9.5	4.5
5 to 8 months	5.4	5.9	4.9	4.8	4.6	8.3	8.4	5.1
9 to 11 months	4.1	4.2	3.9	3.9	3.9	5.0	4.8	4.0
12 months	69.0	68.8	69.2	72.9	76.2	46.4	40.6	71.9
1 to 12 months	83.4	84.1	82.8	85.9	88.4	68.5	63.3	85.5

See footnotes at end of table.

Table A. **All Persons by Sex, Race, Hispanic Origin, and Health Insurance Coverage: Calendar Years 1991 and 1992 From the 1991 SIPP Panel—Con.**

Health insurance coverage	Both sexes	Male	Female	White		Black	Hispanic origin ¹	Not of Hispanic origin
				Total	Not of Hispanic origin			
	1991 CALENDAR YEAR—Con.							
Percent covered by medicaid:								
Less than 12 months	93.6	95.2	92.1	95.5	96.4	81.8	86.3	94.3
No months	88.5	90.7	86.5	91.3	92.9	71.0	74.8	89.9
1 to 11 months.	5.0	4.5	5.6	4.2	3.5	10.8	11.5	4.4
1 to 4 months.	2.1	1.9	2.3	1.7	1.5	4.6	4.2	1.9
5 to 8 months.	1.8	1.6	1.9	1.5	1.1	3.6	4.9	1.4
9 to 11 months.	1.2	1.0	1.4	1.0	0.8	2.6	2.4	1.1
12 months.	6.4	4.8	7.9	4.5	3.6	18.2	13.7	5.7
1 to 12 months.	11.5	9.3	13.5	8.7	7.1	29.0	25.2	10.1

¹Persons of Hispanic origin may be of any race. The information on the Hispanic population shown in this report was collected in the 50 States and the District of Columbia, and therefore, does not include residents of Puerto Rico.

- Work experience has a significant effect on health insurance coverage. Eighty six point seven (± 1.4) percent of persons who worked full-time for the entire period were covered continuously by health insurance, compared with 72.5 (± 5.9) percent for full-period, part-time workers, and 59.9 (± 1.7) percent for workers with one or more job interruptions.
- Those who were poor or near poor were less likely to have continuous health insurance coverage than others. Eighty three point three (± 0.8) percent of those with an income-to-poverty ratio of 2.0 or greater had continuous coverage, compared to 50.3 (± 1.8) percent of those with an income-to-poverty ratio below 2.0.
- Twenty six point five (± 0.8) percent of all persons experienced at least one period of time without health insurance coverage during the 32-month survey period in 1991 to 1993. Of all observed spells without health insurance, half lasted for 7.1 months or longer. This estimate was significantly longer than the 6.0 months of noncoverage for the 1990 to 1992 period.

ESTIMATES OF HEALTH INSURANCE COVERAGE

Health insurance coverage is commonly associated with other life circumstances, such as employment, retirement, and program participation. As a result, there exists a strong likelihood that for some segments of the population health insurance status will change over time. Through the use of longitudinal estimates, it is possible to examine the dynamics of health insurance coverage, and the extent to which persons experience a lapse in coverage during a given time period.

The 1991 SIPP panel file was used to examine the number of months persons were covered by health insurance during a 32-month period. Interviews from this

panel were conducted between February 1991 and September 1993, allowing examination of health insurance coverage for 2 full calendar years: 1991 and 1992. During the 1991 calendar year, 79 percent of all persons had health insurance coverage for the entire year; 21 percent, or 51 million persons, lacked coverage for at least 1 month. Seven percent, or 17 million persons, were never covered in 1991. The 1992 calendar year estimates were similar, showing 80 percent, 20 percent, and 7 percent, respectively. (See table A and figure 1.)

Figure 1.
Health Insurance Coverage: 1991 to 1993
Percent

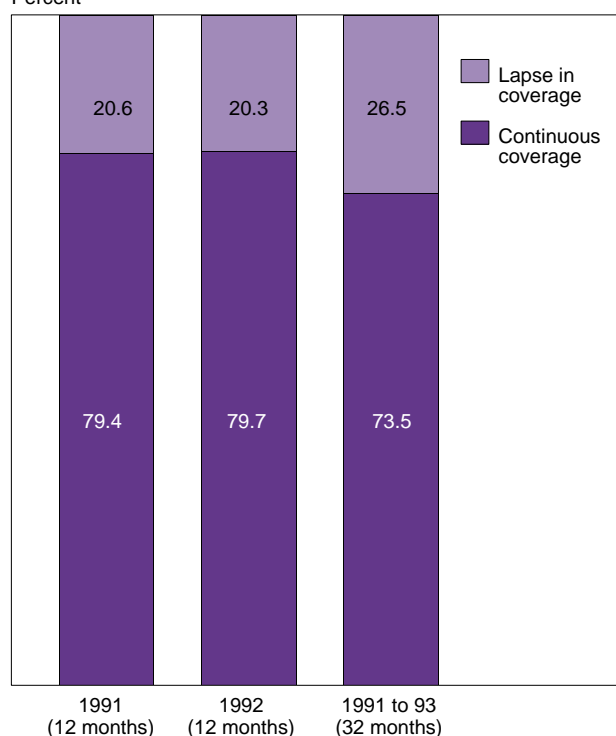


Table B. All Persons by Sex, Race, Hispanic Origin, and Health Insurance Coverage: 1991 to 1993

Health insurance coverage	Both sexes	Male	Female	White		Black	Hispanic origin ¹	Not of Hispanic origin
				Total	Not of Hispanic origin			
All persons (in thousands).....	241 955 (100.0)	117 061 (100.0)	124 894 (100.0)	201 822 (100.0)	184 021 (100.0)	30 086 (100.0)	22 221 (100.0)	219 734 (100.0)
Percent covered by private or government health insurance:								
Less than 32 months	26.5	28.3	24.7	24.6	22.1	36.4	49.5	24.1
No months	3.9	4.6	3.2	3.7	3.1	5.0	8.6	3.4
1 to 31 months.....	22.6	23.7	21.5	21.0	19.0	31.3	40.9	20.7
1 to 6 months.....	2.6	3.0	2.2	2.5	2.0	3.3	6.9	2.2
7 to 12 months.....	3.5	3.9	3.3	3.2	2.6	4.9	9.0	3.0
13 to 18 months.....	2.9	3.0	2.8	2.6	2.4	4.0	4.9	2.7
19 to 24 months.....	5.1	5.2	5.0	4.6	4.3	7.9	8.3	4.7
25 to 30 months.....	7.4	7.6	7.3	7.0	6.7	10.1	10.9	7.1
31 months.....	1.0	1.1	1.0	1.0	1.1	1.1	0.8	1.0
32 months.....	73.5	71.7	75.3	75.4	77.9	63.6	50.5	75.9
1 to 32 months.....	96.1	95.4	96.8	96.3	96.9	95.0	91.4	96.6
Percent covered by private health insurance:								
Less than 32 months	37.1	37.0	37.2	33.4	30.2	59.6	65.4	34.3
No months	12.7	11.9	13.4	10.5	8.4	26.9	29.8	10.9
1 to 31 months.....	24.5	25.1	23.8	22.9	21.9	32.8	35.6	23.3
1 to 6 months.....	4.1	4.1	4.2	3.6	3.0	7.1	9.5	3.6
7 to 12 months.....	3.9	4.2	3.7	3.6	3.2	5.7	7.8	3.5
13 to 18 months.....	2.8	2.9	2.8	2.6	2.5	3.5	3.5	2.7
19 to 24 months.....	5.2	5.3	5.1	4.9	4.9	7.3	6.1	5.1
25 to 30 months.....	7.4	7.7	7.2	7.3	7.4	8.1	7.8	7.4
31 months.....	0.9	1.0	0.9	0.9	1.0	1.1	0.8	0.9
32 months.....	62.9	63.0	62.8	66.6	69.8	40.4	34.6	65.7
1 to 32 months.....	87.3	88.1	86.6	89.5	91.6	73.1	70.2	89.1
Percent covered by medicaid:								
Less than 32 months	94.9	96.3	93.5	96.6	97.3	84.2	89.1	95.4
No months	85.7	88.3	83.2	88.7	90.6	66.1	68.7	87.4
1 to 31 months.....	9.2	8.0	10.3	7.8	6.7	18.1	20.4	8.0
1 to 6 months.....	2.8	2.8	2.7	2.6	2.3	4.2	5.0	2.5
7 to 12 months.....	2.1	1.7	2.6	1.8	1.5	4.2	5.4	1.8
13 to 18 months.....	1.2	1.0	1.3	1.0	0.8	2.7	2.3	1.1
19 to 24 months.....	1.5	1.1	1.9	1.2	0.9	3.8	3.8	1.3
25 to 30 months.....	1.5	1.2	1.7	1.2	1.0	3.2	3.7	1.2
31 months.....	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1
32 months.....	5.1	3.7	6.5	3.4	2.7	15.8	10.9	4.6
1 to 32 months.....	14.3	11.7	16.8	11.3	9.4	33.9	31.3	12.6

¹Persons of Hispanic origin may be of any race. The information on the Hispanic population shown in this report was collected in the 50 States and the District of Columbia, and therefore, does not include residents of Puerto Rico.

Between 1991 and 1993, 74 percent of all persons had continuous health insurance coverage over the entire 32-month period; 26 percent lacked health insurance for at least 1 month. (See table B.) Seven percent of all persons were covered by insurance for 6 months or less (4 percent lacked coverage for the entire period, and another 3 percent were covered for 1 to 6 months). Eighty six percent of those with continuous coverage over the 32-month period were covered by private health insurance; 7 percent were covered by medicaid. The remaining 7 percent represent those covered by medicare, the

military, or a combination of various types of coverage.

Comparisons Over Different Time Periods

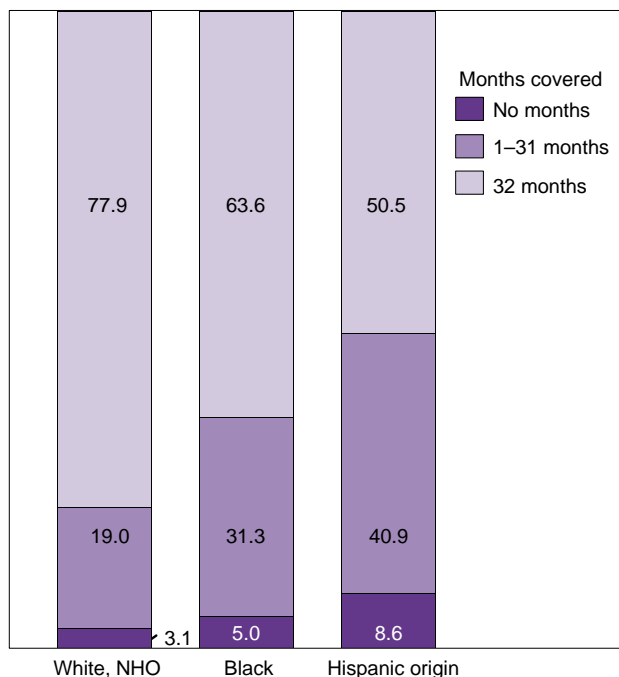
The proportion of persons with lapses in coverage is greater when measured over a longer time period. For example, proportions of those with lapses in coverage were similar for calendar years 1991 and 1992; 21 and 20 percent, respectively. However, over the full 32-month period the proportion of those with a lapse in coverage increased to 27 percent. (See figure 1.)

Table C. All Persons by Sex, Race, Hispanic Origin, and Health Insurance Coverage: 1990 to 1993

Health insurance coverage	Both sexes	Male	Female	White		Black	Hispanic origin ¹	Not of Hispanic origin
				Total	Not of Hispanic origin			
	1991 to 1993							
All persons (in thousands)	241 955 (100.0)	117 061 (100.0)	124 894 (100.0)	201 822 (100.0)	184 021 (100.0)	30 086 (100.0)	22 221 (100.0)	219 734 (100.0)
Percent covered by private or government health insurance:								
Less than 32 months	26.5	28.3	24.7	24.6	22.1	36.4	49.5	24.1
No months	3.9	4.6	3.2	3.7	3.1	5.0	8.6	3.4
1 to 31 months.....	22.6	23.7	21.5	21.0	19.0	31.3	40.9	20.7
32 months.....	73.5	71.7	75.3	75.4	77.9	63.6	50.5	75.9
1 to 32 months.....	96.1	95.4	96.8	96.3	96.9	95.0	91.4	96.6
Percent covered by private health insurance:								
Less than 32 months	37.1	37.0	37.2	33.4	30.2	59.6	65.4	34.3
No months	12.7	11.9	13.4	10.5	8.4	26.9	29.8	10.9
1 to 31 months.....	24.5	25.1	23.8	22.9	21.9	32.8	35.6	23.3
32 months.....	62.9	63.0	62.8	66.6	69.8	40.4	34.6	65.7
1 to 32 months.....	87.3	88.1	86.6	89.5	91.6	73.1	70.2	89.1
Percent covered by medicaid:								
Less than 32 months	94.9	96.3	93.5	96.6	97.3	84.2	89.1	95.4
No months	85.7	88.3	83.2	88.7	90.6	66.1	68.7	87.4
1 to 31 months.....	9.2	8.0	10.3	7.8	6.7	18.1	20.4	8.0
32 months.....	5.1	3.7	6.5	3.4	2.7	15.8	10.9	4.6
1 to 32 months.....	14.3	11.7	16.8	11.3	9.4	33.9	31.3	12.6
	1990 to 1992							
All persons (in thousands).....	235 811 (100.0)	113 681 (100.0)	122 131 (100.0)	198 579 (100.0)	182 646 (100.0)	28 982 (100.0)	18 565 (100.0)	217 246 (100.0)
Percent covered by private or government health insurance:								
Less than 32 months	25.3	26.6	24.0	23.5	21.2	36.0	48.0	23.3
No months	3.8	4.3	3.3	3.5	2.9	5.1	10.1	3.3
1 to 31 months.....	21.5	22.3	20.7	19.9	18.3	31.0	37.8	20.1
32 months.....	74.7	73.4	76.0	76.5	78.8	64.0	52.0	76.7
1 to 32 months.....	96.2	95.7	96.7	96.5	97.1	94.9	89.9	96.7
Percent covered by private health insurance:								
Less than 32 months	35.4	34.8	35.9	31.6	28.7	58.5	63.9	33.0
No months	11.6	10.7	12.4	9.3	7.6	25.3	28.5	10.2
1 to 31 months.....	23.8	24.1	23.5	22.3	21.1	33.3	35.4	22.8
32 months.....	64.6	65.2	64.1	68.4	71.3	41.5	36.1	67.0
1 to 32 months.....	88.4	89.3	87.6	90.7	92.4	74.7	71.5	89.8
Percent covered by medicaid:								
Less than 32 months	95.3	96.7	94.1	97.0	97.6	85.1	89.5	95.8
No months	87.7	90.3	85.3	90.7	92.1	68.8	72.2	89.0
1 to 31 months.....	7.6	6.4	8.8	6.4	5.5	16.3	17.3	6.8
32 months.....	4.7	3.3	5.9	3.0	2.4	14.9	10.5	4.2
1 to 32 months.....	12.3	9.7	14.7	9.3	7.9	31.2	27.8	11.0

¹Persons of Hispanic origin may be of any race. The information on the Hispanic population shown in this report was collected in the 50 States and the District of Columbia, and therefore, does not include residents of Puerto Rico.

Figure 2.
Health Insurance Coverage by Race and Hispanic Origin: 1991 to 1993
 Percent



Comparisons of estimates over a 32-month period from the 1991 panel with those from the 1990 panel show similar patterns of health insurance coverage between the 1990-92 period and the 1991-93 period. (See table C.) A slightly lower proportion of persons had continuous coverage in the later period—the percent covered for the entire 32-month period dropped from 75 percent in the 1990-92 period to 74 percent from 1991-93. This decrease was primarily due to a decrease in continuous private health insurance coverage, which dropped from 65 to 63 percent.

Sex, Race, and Hispanic Origin

Over the 32-month period beginning in February 1991, women were more likely than men to have continuous health insurance coverage. (See table B.) Twenty eight percent of all men lacked health insurance for 1 or more months; the comparable figure for women was 25 percent. The difference between the percentages of men and women with continuous private health insurance coverage was not significant. The difference between men and women in overall health insurance coverage is partially attributable to differences in economic status. Women are more likely than men to live in

Figure 3.
Health Insurance Coverage by Age: 1991 to 1993
 Percent

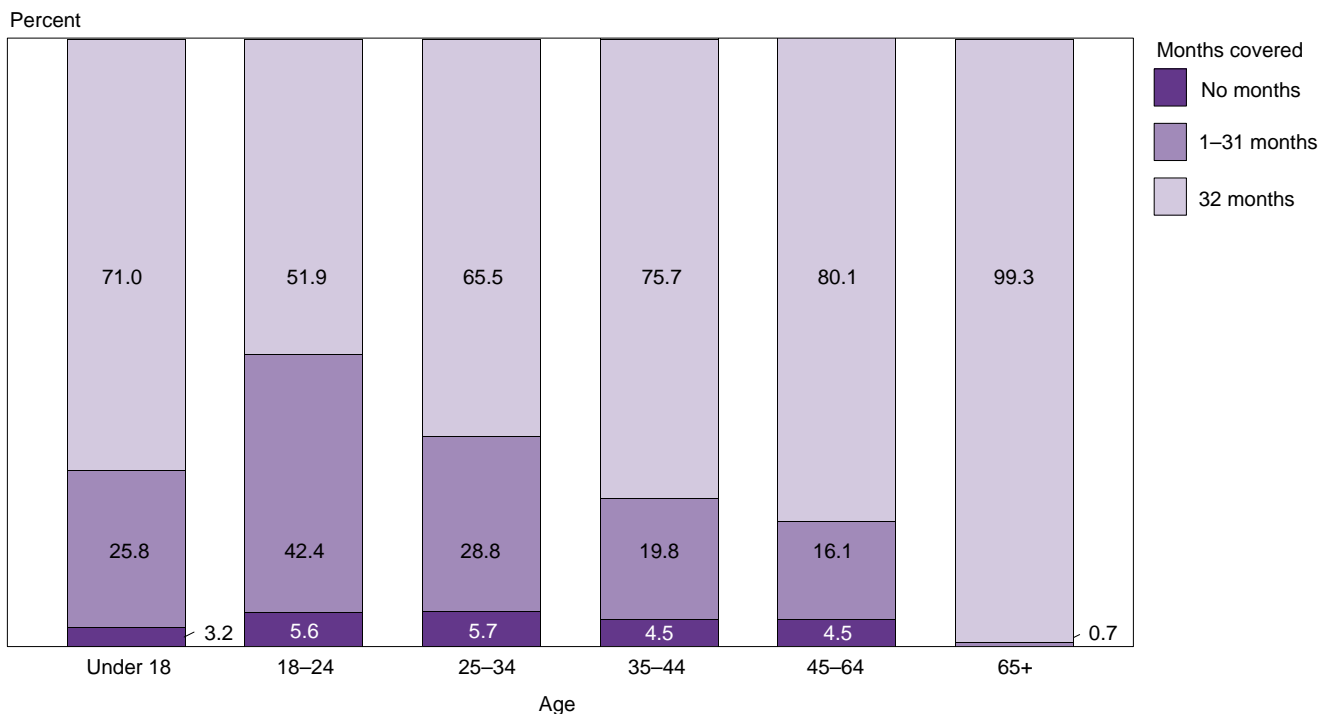


Table D. **All Persons by Age and Health Insurance Coverage: 1991 to 1993**

Health insurance coverage	Under 18 years		18 to 24 years			25 to 34 years	35 to 44 years	45 to 64 years	65 years and over
	Total	Under 6 years	Total	18 to 21 years	22 to 24 years				
All persons (in thousands).....	67 420 (100.0)	24 124 (100.0)	24 182 (100.0)	13 480 (100.0)	10 703 (100.0)	42 193 (100.0)	38 240 (100.0)	44 208 (100.0)	25 711 (100.0)
Percent covered by private or government health insurance:									
Less than 32 months	29.0	27.4	48.1	48.9	47.1	34.5	24.3	19.9	0.7
No months	3.2	2.2	5.6	5.0	6.4	5.7	4.5	3.8	0.0
1 to 31 months.....	25.8	25.2	42.4	43.8	40.6	28.8	19.8	16.1	0.7
1 to 6 months.....	2.8	2.2	4.8	4.0	5.8	3.5	2.5	1.8	0.1
7 to 12 months.....	3.9	3.8	6.6	6.5	6.8	4.7	2.8	2.9	0.1
13 to 18 months.....	3.4	3.1	5.3	5.7	4.8	3.9	2.3	1.9	0.1
19 to 24 months.....	6.1	5.7	9.8	11.0	8.2	6.1	4.4	3.4	0.1
25 to 30 months.....	8.5	9.1	14.1	15.1	12.9	9.0	6.7	5.5	0.3
31 months.....	1.1	1.3	1.8	1.6	2.2	1.6	1.0	0.6	0.0
32 months.....	71.0	72.6	51.9	51.1	52.9	65.5	75.7	80.1	99.3
1 to 32 months.....	96.8	97.8	94.4	95.0	93.6	94.3	95.5	96.2	100
Percent covered by private health insurance:									
Less than 32 months	40.5	43.4	53.7	53.8	53.6	40.0	28.4	26.4	39.5
No months	17.2	20.0	12.4	11.1	13.9	12.4	9.0	9.8	12.2
1 to 31 months.....	23.3	23.4	41.3	42.6	39.8	27.6	19.5	16.7	27.3
1 to 6 months.....	4.5	5.0	7.2	7.0	7.3	4.7	3.1	2.8	3.1
7 to 12 months.....	4.1	4.2	6.2	6.1	6.4	4.2	2.9	2.7	4.5
13 to 18 months.....	2.8	2.6	4.8	5.0	4.6	3.6	2.1	1.9	2.3
19 to 24 months.....	4.8	4.1	9.0	10.0	7.7	5.5	4.2	3.5	7.0
25 to 30 months.....	6.2	6.5	12.5	13.2	11.6	8.1	6.2	5.3	10.3
31 months.....	0.9	1.1	1.7	1.4	2.2	1.5	0.9	0.5	0.2
32 months.....	59.5	56.6	46.3	46.2	46.4	60.0	71.6	73.6	60.5
1 to 32 months.....	82.8	80.0	87.6	88.9	86.1	87.6	91.0	90.2	87.8
Percent covered by medicaid:									
Less than 32 months	91.4	88.0	95.9	96.4	95.1	96.2	97.4	97.3	93.0
No months	73.8	67.0	85.6	85.7	85.4	88.5	93.0	92.8	89.1
1 to 31 months.....	17.6	21.0	10.3	10.7	9.7	7.7	4.3	4.4	3.9
1 to 6 months.....	5.4	5.6	2.4	2.2	2.7	2.2	1.5	1.3	1.3
7 to 12 months.....	3.7	4.7	2.7	2.8	2.6	2.3	1.0	1.2	0.6
13 to 18 months.....	2.3	2.8	1.7	1.9	1.4	1.0	0.6	0.5	0.4
19 to 24 months.....	3.0	3.7	2.0	2.1	1.8	1.2	0.6	0.5	0.7
25 to 30 months.....	3.0	3.9	1.3	1.5	1.1	1.0	0.6	0.8	0.8
31 months.....	0.2	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1
32 months.....	8.6	12.0	4.1	3.6	4.9	3.8	2.6	2.7	7.0
1 to 32 months.....	26.2	33.0	14.4	14.3	14.6	11.5	7.0	7.2	10.9

families with incomes below poverty³ and are more likely to participate in means-tested assistance programs.⁴ Thus, women were more likely than men to take part in medicaid, both in terms of continuous coverage (6 percent) and coverage for at least 1 month (17 percent). The comparable figures for men were 4 percent and 12 percent, respectively.

A second factor contributing to the difference in health insurance coverage between men and women is

age. More women than men are 65 years old and over, and virtually everyone in that age group is covered by medicare.

The relationship between race or Hispanic origin and health insurance was a strong one. The percentages of persons who spent at least 1 month without health insurance were 22 percent for Whites (not of Hispanic origin), 36 percent for Blacks, and 50 percent for persons of Hispanic origin. (See table B and figure 2.) Whites were also much more likely than Blacks or those of Hispanic origin to be covered by private health insurance. Ninety two percent of all Whites (not of Hispanic origin) were covered by private health insurance for at least 1 month. The comparable figures for Blacks and persons of Hispanic origin were about 73

³In 1993, the official poverty rate was 13.3 percent for males and 16.9 percent for females. See Current Population Reports, Series P60-188, *Income, Poverty, and Valuation of Noncash Benefits: 1993*.

⁴From the 1990 SIPP panel file, 18.5 percent of all females participated in means-tested public assistance programs compared with 14.3 percent of all males.

Table E. **All Persons by Years of School Completed and Health Insurance Coverage: 1991 to 1993**

Health insurance coverage	Persons 18 years and over	Years of school completed		
		Less than high school	High school, no college	College, 1 year or more
All persons (in thousands).....	174 535 (100.0)	35 533 (100.0)	67 239 (100.0)	71 762 (100.0)
Percent covered by private or government health insurance:				
Less than 32 months	25.5	32.4	28.2	19.4
No months	4.1	7.0	4.5	2.3
1 to 31 months.....	21.3	25.5	23.7	17.1
32 months.....	74.5	67.6	71.8	80.6
1 to 32 months.....	95.9	93.0	95.5	97.7
Percent covered by private health insurance:				
Less than 32 months	35.8	59.2	36.7	23.4
No months	10.9	26.7	9.8	4.2
1 to 31 months.....	24.9	32.6	27.0	19.2
32 months.....	64.2	40.8	63.3	76.6
1 to 32 months.....	89.1	73.3	90.2	95.8
Percent covered by medicaid:				
Less than 32 months	96.2	88.6	97.0	99.2
No months	90.3	76.3	91.0	96.5
1 to 31 months.....	5.9	12.3	6.0	2.7
32 months.....	3.8	11.4	3.0	0.8
1 to 32 months.....	9.7	23.7	9.0	3.5

percent and 70 percent, respectively. These estimates are not significantly different.

Age

Young adults (those between the ages of 18 and 24) were the most likely of any age group to spend at least 1 month without health insurance coverage. (See table D.) About one-half (48 percent) of all persons between the ages of 18 and 24 lacked health insurance for at least 1 month; 10 percent were covered for less than 7 months.

Generally, for persons 18 years old and over, there was a positive relationship between age and continuous health insurance coverage. Continuous health insurance coverage rates for persons by age group from 18 to 24 to 65 years old and over monotonically increased from 52 percent to 99 percent, respectively. (See figure 3.)

Years of School Completed

Persons completing at least 1 year of college were less likely to spend at least 1 month without health insurance coverage than those with lower levels of educational attainment. (See table E and figure 4.) For example, about 19 percent of those (18 years old and

over) completing at least 1 year of college were without health insurance coverage for at least 1 month, compared to 28 percent for those who completed high school (no college) and 32 percent for those with less than a high school education.

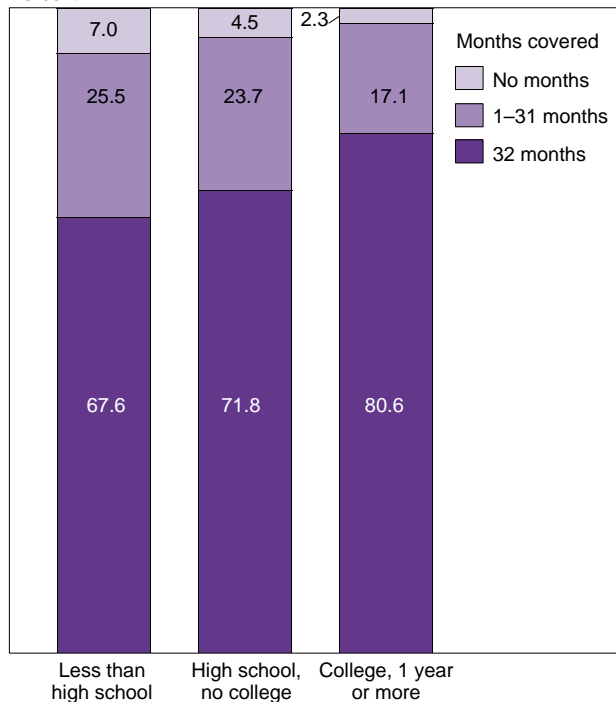
As for continuous health insurance coverage rates, those completing high school (no college) and those with less than a high school education also differed in their private health insurance and medicaid coverage rates. Sixty three percent of the high school graduates (no college) were covered by private health insurance for each of the 32 months, and 90 percent were covered by private health insurance for at least 1 month. The comparable percentages for nonhigh school graduates were 41 and 73 percent, respectively.

Type of Residence and Region

Persons living in suburban areas⁵ were more likely to have continuous health insurance coverage over the 32-month period than persons living in central cities or outside of metropolitan areas. (See table F.) About one-fifth (22 percent) of persons living in suburban areas experienced 1 or more months without health insurance coverage, compared with 30 percent for both those

⁵Refers to portions of metropolitan areas outside of central cities.

Figure 4.
Health Insurance Coverage by Years
of School Completed: 1991 to 1993
Percent



living in central cities and those living outside metropolitan areas. Medicaid coverage was more prevalent in central cities and nonmetropolitan areas. Nineteen percent of central city residents spent at least 1 month with medicaid coverage, 17 percent for those living outside metropolitan areas⁶ and only 10 percent for those living in suburban areas.

Persons residing in the South and West were more likely to experience 1 or more months without health insurance coverage than those living in the Northeast or Midwest. The percentages of persons with 1 or more months without health insurance coverage were 31 percent in the South, 30 percent in the West, 21 percent in the Midwest, and 22 percent in the Northeast⁷. Perhaps the higher noncoverage rates in the South and West can be partially attributed to higher concentrations of Blacks in the South and persons of Hispanic origin in the West. These groups had higher noncoverage rates than Whites (not of Hispanic origin).

⁶There was no significant difference in the medicaid coverage rate of 19 percent for those in the central city and the 17 percent for those outside metropolitan areas.

⁷The percentage for those who live in the South (30 percent) was not significantly different from the percentage for those who live in the West (31 percent). There was also no significant difference between the percentage for those who live in the Northeast (22 percent) and the percentage for those who live in the Midwest (21 percent).

Figure 5.
Health Insurance Coverage by Months With Low Income: 1991 to 1993
Percent

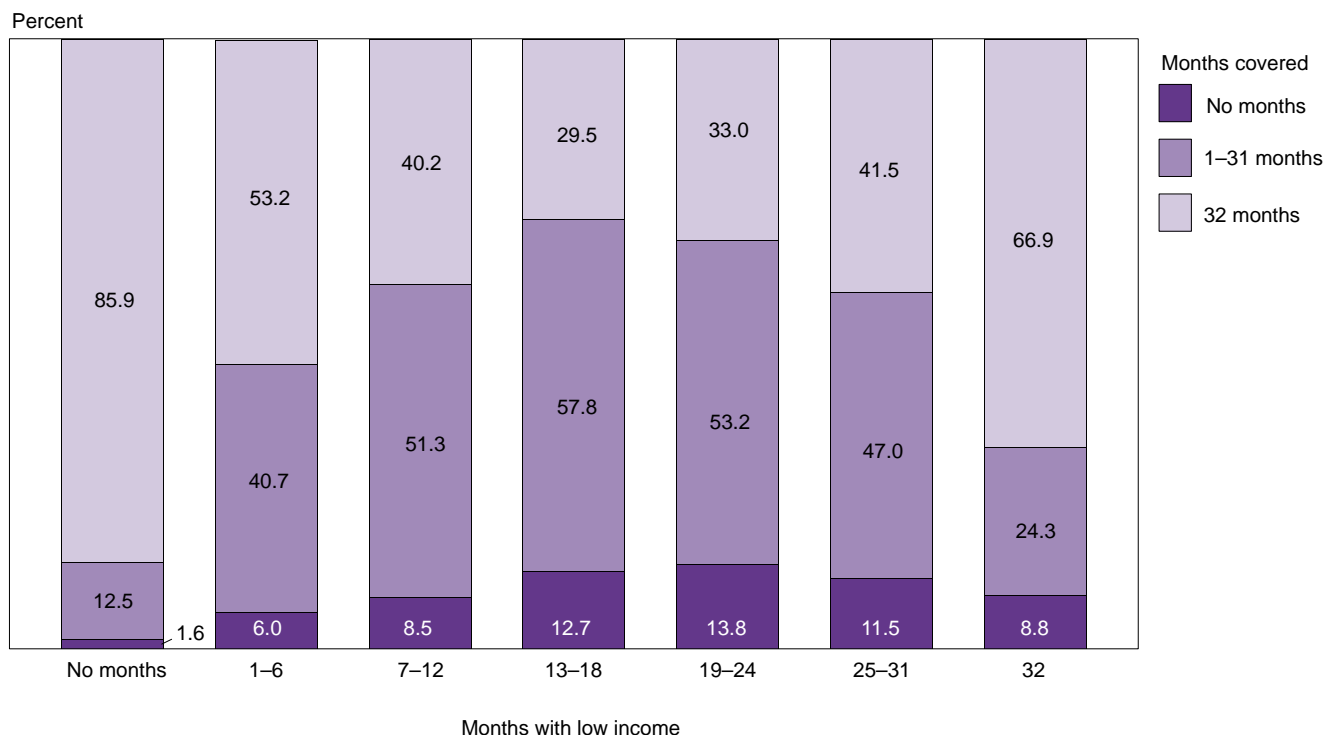


Table F. All Persons by Residence, Region, and Health Insurance Coverage: 1991 to 1993

Health insurance coverage	Central city	Suburbs	Outside of metropolitan areas	Northeast	Midwest	South	West
All persons (in thousands).....	68 726 (100.0)	114 894 (100.0)	58 335 (100.0)	50 029 (100.0)	63 321 (100.0)	78 335 (100.0)	50 269 (100.0)
Percent covered by private or government health insurance:							
Less than 32 months	30.1	22.4	30.2	22.2	20.8	31.2	30.4
No months	4.3	3.1	4.9	2.4	2.7	5.4	4.5
1 to 31 months.....	25.8	19.3	25.3	19.8	18.1	25.9	25.9
32 months.....	69.9	77.6	69.8	77.8	79.2	68.8	69.6
1 to 32 months.....	95.7	96.9	95.1	97.6	97.3	94.6	95.5
Percent covered by private health insurance:							
Less than 32 months	45.1	30.2	41.4	34.3	28.7	42.9	41.5
No months	16.9	9.1	14.9	11.3	8.6	15.9	14.1
1 to 31 months.....	28.2	21.1	26.6	23.0	20.1	27.0	27.4
32 months.....	54.9	69.8	58.6	65.7	71.3	57.1	58.5
1 to 32 months.....	83.1	90.9	85.1	88.7	91.4	84.1	85.9
Percent covered by medicaid:							
Less than 32 months	91.6	96.8	94.9	93.6	96.2	94.8	94.6
No months	81.0	89.9	82.9	85.5	88.7	84.5	83.9
1 to 31 months.....	10.5	6.9	12.1	8.1	7.4	10.3	10.7
32 months.....	8.4	3.2	5.1	6.4	3.8	5.2	5.4
1 to 32 months.....	19.0	10.1	17.1	14.5	11.3	15.5	16.1

Table G. All Persons by Months With Low Income and Health Insurance Coverage: 1991 to 1993

Health insurance coverage		1 low-income month or more								
		No months	1 to 12 months				13 to 24 months		25 to 31 months	32 months
			Total	1 to 6 months	7 to 12 months	Total	13 to 18 months	19 to 24 months		
All persons (in thousands).....	163 907 (100.0)	78 047 (100.0)	45 262 (100.0)	32 634 (100.0)	12 628 (100.0)	14 234 (100.0)	7 806 (100.0)	6 428 (100.0)	8 501 (100.0)	10 051 (100.0)
Percent covered by private or government health insurance:										
Less than 32 months	14.1	52.4	50.4	46.8	59.8	68.9	70.5	67.0	58.5	33.1
No months	1.6	8.7	6.7	6.0	8.5	13.2	12.7	13.8	11.5	8.8
1 to 31 months.....	12.5	43.7	43.7	40.7	51.3	55.7	57.8	53.2	47.0	24.3
32 months.....	85.9	47.6	49.6	53.2	40.2	31.1	29.5	33.0	41.5	66.9
1 to 32 months.....	98.4	91.3	93.3	94.0	91.5	86.8	87.3	86.2	88.5	91.2
Percent covered by private health insurance:										
Less than 32 months	20.3	72.5	59.1	54.4	71.1	86.3	85.7	87.0	94.6	94.8
No months	3.9	31.1	12.9	10.9	18.0	37.1	30.7	44.9	63.3	77.7
1 to 31 months.....	16.4	41.4	46.2	43.5	53.1	49.1	55.0	42.0	31.4	17.2
32 months.....	79.7	27.5	40.9	45.6	28.9	13.7	14.3	13.0	5.4	5.2
1 to 32 months.....	96.1	68.9	87.1	89.1	82.0	62.9	69.3	55.1	36.7	22.3
Percent covered by medicaid:										
Less than 32 months	98.9	86.3	97.0	97.7	95.3	90.9	93.5	87.8	70.4	44.9
No months	95.9	64.3	83.2	86.7	74.0	55.6	62.5	47.3	28.5	21.6
1 to 31 months.....	3.1	22.0	13.8	10.9	21.3	35.3	31.0	40.5	41.8	23.4
32 months.....	1.1	13.7	3.0	2.4	4.7	9.1	6.5	12.2	29.6	55.1
1 to 32 months.....	4.1	35.7	16.8	13.3	26.0	44.4	37.5	52.7	71.5	78.4

Months With Low Income

One way to examine differences in economic status between individuals over time is to characterize those persons by the number of months in which the person or family income was below their monthly poverty threshold. As would be expected, persons living above the poverty line (no low-income months) were much more likely to have continuous health insurance coverage than persons who experienced 1 or more low-income months. Only 14 percent of those above the poverty line spent 1 or more months without health insurance, compared with over one-half (52 percent) of those with 1 or more low-income months. (See table G.)

However, the relationship between lack of health insurance coverage and months with low income is not a linear one. Those who experienced a moderate number of months (13 to 24 months) in poverty were more likely to go without health insurance for at least 1 month than those who experienced a shorter (1 to 12) or longer (25 or more) number of months in poverty. Sixty nine percent of those with 13 to 24 low-income months went without health insurance for 1 month or more, compared to 50 percent for those with 1 to 12 low income months and 45 percent for those with 25 or more low income months. (See figure 5.) The higher health insurance coverage rates of those with more low-income months is attributable to their level of medicaid coverage. Seventy five percent of those with 25 or more low-income months

were covered by medicaid for at least 1 month; 43 percent were covered every month. The comparable figures for those with 13 to 24 low-income months were 44 and 9 percent, respectively. The group with 13 to 24 low-income months were as likely to be covered by medicaid for at least 1 month as those with 25 or more low-income months were likely to be covered by medicaid every month.

Income-to-Poverty Ratios

Income-to-poverty ratios represent another way of characterizing individuals by their relative economic status. These ratios are computed by summing the personal or family income over the entire 32-month period, and dividing this total by the summed monthly poverty thresholds. Thus, a ratio of under 1.0 indicates that an individual's family income over the 32-month period was less than the sum of that family's poverty threshold over that time. In the 32-month period covered here, 10 percent of persons had an income-to-poverty ratio less than 1.0. More than one-half (51 percent) of these persons lacked continuous health insurance, and 11 percent were not covered at all during the 32-month period, compared to 24 and 3 percent, respectively, for all others. (See table H.)

As would be expected, there is a strong correlation between income-to-poverty ratios and the likelihood of continuous health insurance. The percentage of persons

Table H. **All Persons by Income-to-Poverty Ratios and Health Insurance Coverage: 1991 to 1993**

Health insurance coverage	Total	Income-to-poverty ratio less than 1.0			1.0 to 1.99	2.0 to 2.99	3.0 to 3.99	4.0 to 4.99	5.0 to 5.99	6.0 and over
		Total	Less than .5	.5 to .99						
All persons (in thousands).....	241 955 (100.0)	24 579 (100.0)	6 928 (100.0)	17 651 (100.0)	46 959 (100.0)	50 121 (100.0)	40 960 (100.0)	28 106 (100.0)	18 221 (100.0)	33 008 (100.0)
Percent covered by private or government health insurance:										
Less than 32 months	26.5	50.8	48.5	51.8	49.0	27.8	17.0	13.3	9.6	6.4
No months	3.9	11.4	11.5	11.4	8.3	3.0	1.3	1.2	0.7	0.4
1 to 31 months.....	22.6	39.4	37.0	40.4	40.8	24.8	15.7	12.0	8.9	6.0
32 months.....	73.5	49.2	51.5	48.2	51.0	72.2	83.0	86.7	90.4	93.6
1 to 32 months.....	96.1	88.6	88.5	88.6	91.7	97.0	98.7	98.8	99.3	99.6
Percent covered by private health insurance:										
Less than 32 months	37.1	93.8	94.6	93.4	65.5	35.7	21.0	16.9	11.9	8.0
No months	12.7	66.6	75.2	63.2	20.0	5.8	2.2	2.3	1.2	0.7
1 to 31 months.....	24.5	27.1	19.4	30.2	45.5	30.0	18.7	14.6	10.8	7.3
32 months.....	62.9	6.2	5.4	6.6	34.5	64.3	79.0	83.1	88.1	92.0
1 to 32 months.....	87.3	33.4	24.8	36.8	80.0	94.2	97.8	97.7	98.8	99.3
Percent covered by medicaid:										
Less than 32 months	94.9	63.8	56.3	66.7	94.5	98.8	99.6	99.6	99.6	99.9
No months	85.7	29.8	23.7	32.2	76.0	93.3	96.5	97.6	98.5	98.9
1 to 31 months.....	9.2	33.9	32.6	34.4	18.6	5.6	3.1	2.0	1.2	1.0
32 months.....	5.1	36.2	43.7	33.3	5.5	1.2	0.4	0.4	0.4	0.1
1 to 32 months.....	14.3	70.2	76.3	67.8	24.0	6.7	3.5	2.4	1.5	1.1

Figure 6.
Health Insurance Coverage by Income-to-Poverty Ratios: 1991 to 1993

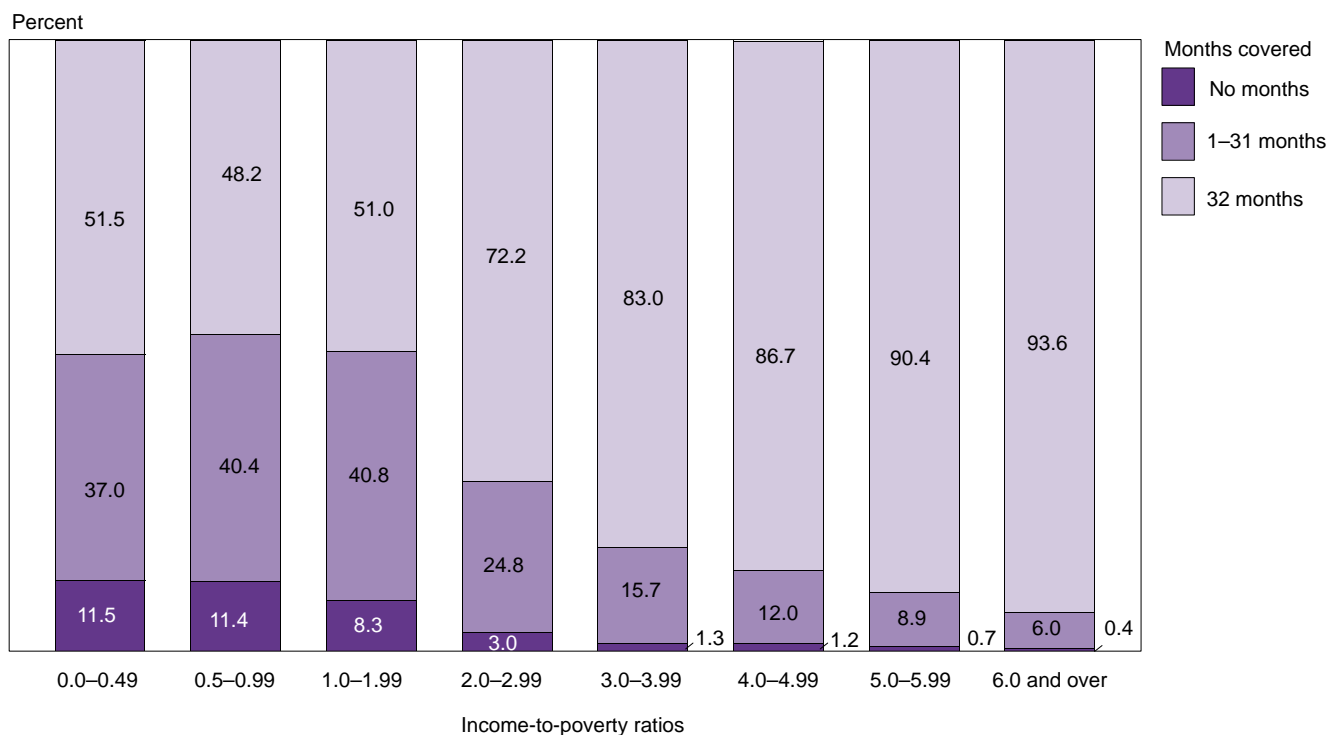


Figure 7.
Distribution of Spells Without Health Insurance
by Spell Length: 1991 to 1993

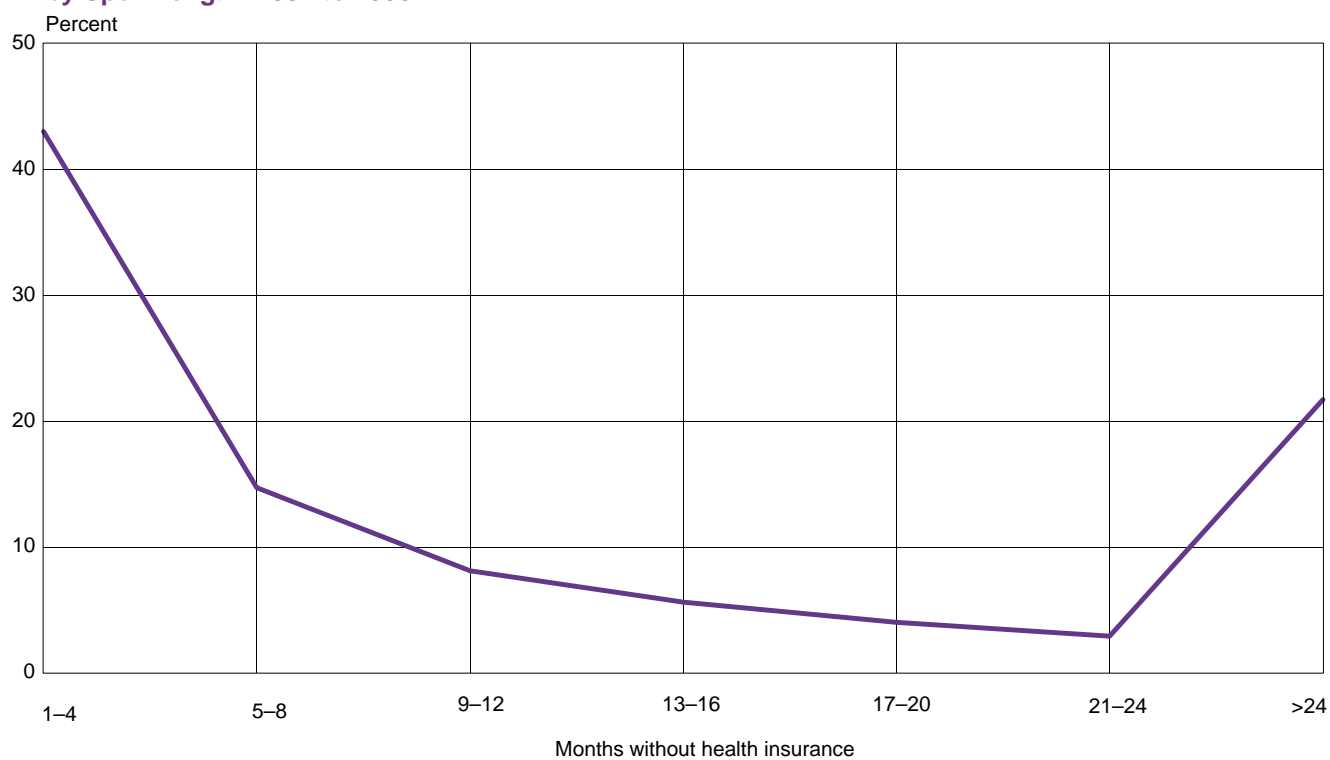


Table I. **Continuous Health Insurance Coverage of Wage and Salary Workers by Sex, Race, Hispanic Origin, and Labor Force Status: 1991 to 1993**

[In thousands. Based on workers 18 to 64 years old]

Health insurance coverage	Both sexes	Male	Female	White		Black	Hispanic origin ¹	Not of Hispanic origin
				Total	Not of Hispanic origin			
	FULL-TIME, FULL-PERIOD WORKERS							
All persons	53 232 (100.0)	31 938 (100.0)	21 295 (100.0)	45 610 (100.0)	42 738 (100.0)	5 731 (100.0)	3 868 (100.0)	49 365 (100.0)
Percent continuously covered for 32 months by:								
Private or government health insurance	86.7	86.2	87.4	88.0	89.3	76.6	67.0	88.2
Private health insurance	86.0	85.4	86.9	87.4	88.9	75.4	65.5	87.6
Employer-provided health insurance	64.3	67.6	59.4	65.4	66.5	57.7	48.9	65.5
	PART-TIME, FULL-PERIOD WORKERS							
All persons	5 092 (100.0)	1 140 (100.0)	3 952 (100.0)	4 544 (100.0)	4 346 (100.0)	328 (100.0)	242 (100.0)	4 850 (100.0)
Percent continuously covered for 32 months by:								
Private or government health insurance	72.5	61.5	75.6	75.2	76.5	39.9	52.0	73.5
Private health insurance	70.3	56.0	74.5	73.2	74.4	38.5	49.1	71.4
Employer-provided health insurance	21.4	29.6	19.1	22.1	22.3	21.0	26.3	21.2
	WORKERS WITH ONE OR MORE JOB INTERRUPTIONS							
All persons	77 034 d(100.0)	31 619 (100.0)	45 416 (100.0)	63 769 (100.0)	57 365 (100.0)	9 727 (100.0)	7 790 (100.0)	69 244 (100.0)
Percent continuously covered for 32 months by:								
Private or government health insurance	59.9	51.5	65.7	61.7	64.5	50.1	38.6	62.3
Private health insurance	50.7	45.1	54.6	54.4	57.6	28.9	26.2	53.4
Employer-provided health insurance	14.1	20.8	9.5	14.7	15.5	11.4	8.3	14.8

¹Persons of Hispanic origin may be of any race. The information on the Hispanic population shown in this report was collected in the 50 States and the District of Columbia, and therefore, does not include residents of Puerto Rico.

with health insurance for the entire 32 months rose from 50 percent for those with ratios under 2.0 to 94 percent for those with ratios of 6.0 and over. Differences in continuous private health insurance coverage by income-to-poverty ratio are even more dramatic, from 6 percent for persons with ratios under 1.0 to 92 percent for those with ratios of 6.0 or more. (See figure 6.) For those with ratios of 6.0 and over, the percentage of those with continuous health insurance coverage (94 percent) was not significantly different from the percentage of those with continuous private health insurance coverage (92 percent).

Employment Status

The relationship between health insurance coverage and employment is an important one, given the fact that such a large proportion of total health insurance is derived through an employer (either as a primary policyholder or as a dependent). In order to examine the

relationship between health insurance coverage and employment status, wage and salary workers 18 to 64 years old were separated into three groups.

1. Those who worked full-time for the entire period
2. Those who worked part-time for the entire period
3. Those with one or more job interruptions.

Workers were characterized by their private or government health coverage, their private coverage, and their own employer-provided coverage. This latter type of coverage is a subset of private health insurance coverage.

Eighty seven percent of all full-time, full-period workers were covered by health insurance for the entire period, and 64 percent were covered through their own employer-provided plans (table I). There was a significant difference in the continuous health insurance coverage rates of White and Black full-time, full-period

Table J. **Continuous Health Insurance Coverage of Wage and Salary Workers by Age and Labor Force Status: 1991 to 1993**

[In thousands. Based on workers 18 to 64 years old]

Health insurance coverage	18 to 21 years	22 to 24 years	25 to 34 years	35 to 44 years	45 to 64 years
FULL-TIME, FULL-PERIOD WORKERS					
All persons	1 737 (100.0)	3 166 (100.0)	17 473 (100.0)	18 863 (100.0)	16 636 (100.0)
Percent continuously covered for 32 months by:					
Private or government health insurance	60.1	75.8	82.0	87.6	91.5
Private health insurance	59.2	75.4	81.1	87.1	90.7
Employer-provided health insurance	33.8	54.8	59.5	60.5	63.3
PART-TIME, FULL-PERIOD WORKERS					
All persons	599 (100.0)	303 (100.0)	1 495 (100.0)	1 592 (100.0)	1 859 (100.0)
Percent continuously covered for 32 months by:					
Private or government health insurance	63.4	33.0	73.2	76.3	75.6
Private health insurance	63.4	28.4	71.7	75.3	71.6
Employer-provided health insurance	11.6	6.3	23.9	18.3	20.6
WORKERS WITH ONE OR MORE JOB INTERRUPTIONS					
All persons	11 144 (100.0)	7 234 (100.0)	23 225 (100.0)	17 785 (100.0)	25 713 (100.0)
Percent continuously covered for 32 months by:					
Private or government health insurance	49.1	43.8	52.7	63.1	73.1
Private health insurance	43.3	34.4	43.4	54.7	62.6
Employer-provided health insurance	2.0	8.5	12.6	15.1	18.2

workers. Hispanic-origin workers in this category were less likely than Whites (not of Hispanic origin) or Blacks to have continuous coverage; the comparable rates for these groups are 67, 89, and 77 percent, respectively.

Part-time workers were less likely than their full-time counterparts to have continuous health insurance coverage. Twenty eight percent of these workers lacked continuous coverage, compared with 13 percent of full-time workers.

There was a major difference between full- and part-time workers in their levels of own employer-provided coverage. Of part-time workers with continuous coverage, only 21 percent were covered through their own employer-provided plans. The comparable figure for full-time workers was 64 percent. The difference between the private and employer-provided health insurance rates for this group implies that many of these workers are covered as dependents (78 percent of part-time, full-period workers were women).

Less than one-half (40 percent) of workers with one or more job interruptions experienced 1 or more months without health insurance coverage. Men in this category were more likely than women to lack health coverage for

at least 1 month (48 to 34 percent), and men in this category were more likely than women to be covered continuously by their own employer-provided plan (21 to 10 percent).

Younger full-time, full-period workers were less likely than their older counterparts to have been covered by health insurance continuously. Forty percent of full-time, full-period workers 18 to 21 years old spent 1 or more months without health insurance. (See table J.) For workers 22 years old and over, comparable percentages ranged from 9 percent (workers 45 to 64 years old) to 24 percent (workers 22 to 24 years old).

Spells of Noncoverage

One of the major questions asked in the health care debate is how long do Americans go without health insurance. Using a technique known as survival analysis,⁸ it is possible to estimate the duration of spells

⁸See appendix B for a technical note explaining the use of survival analysis in deriving duration of spells without health insurance.

Table K. **Spells Without Health Insurance Coverage by Selected Characteristics: 1990 and 1991 Panels**

Characteristic	1991 panel (1991-93)		1990 panel (1990-92)	
	Median duration	Standard error	Median duration	Standard error
All spells	7.1	0.2	6.0	0.6
Race and Hispanic origin				
White	7.0	0.2	5.4	0.6
Not of Hispanic origin	6.0	1.0	4.9	0.8
Black	7.1	0.2	7.3	0.1
Hispanic ¹	7.7	0.3	7.2	0.2
Not of Hispanic origin	6.1	1.0	5.7	0.6
Age				
Under 18 years	5.1	1.0	4.8	1.5
18 to 24 years	7.3	0.4	6.4	1.3
25 to 34 years	7.1	0.4	5.4	1.1
35 to 44 years	7.2	0.5	7.4	0.5
45 to 64 years	7.7	0.5	6.4	1.5
65 years and over	(B)	(X)	(B)	(X)
Sex				
Male	7.2	0.2	6.6	0.9
Female	6.6	1.4	5.5	0.8
Educational attainment (persons 18 years and over)				
Less than 4 years of high school	10.0	2.1	7.6	0.4
High school graduate, no college	7.2	0.4	7.1	0.3
1 or more years of college	5.1	1.1	4.0	0.1
Residence				
Metropolitan	7.0	0.2	5.8	0.6
Central city	7.4	0.3	6.2	1.2
Suburbs	5.8	0.9	5.4	1.0
Nonmetropolitan	7.2	0.3	6.7	1.1
Region				
Northeast	7.1	0.3	5.1	0.8
Midwest	4.7	1.6	4.7	1.0
South	7.5	0.3	7.2	0.2
West	6.8	1.3	5.3	1.5
Employment status (persons 18 years and over)				
Employed full time	5.7	1.1	4.6	0.9
Employed part time	7.5	0.5	6.8	1.6
Unemployed	7.7	0.5	7.8	0.7
Not in labor force	8.8	3.2	7.2	0.3
Receipt of public assistance				
Received public assistance	6.5	1.9	7.4	0.3
Did not receive public assistance	7.1	0.2	5.7	0.6
Poverty status				
Below poverty	7.5	0.3	7.2	0.2
Above poverty	6.3	1.3	4.9	0.7

¹Persons of Hispanic origin may be of any race. The information on the Hispanic population shown in this report was collected in the 50 States and the District of Columbia, and therefore, does not include residents of Puerto Rico.

Note: These estimates represent those persons observed to begin a spell of noncoverage during the 32-month period of the 1990 and 1991 panels.

without health insurance. A median spell duration of 7.1 months without health insurance was observed for persons (losing health insurance after February 1991) over the 32-month period of the 1991 panel. (See table K.) In other words, of all spells without health insurance (experienced by 27 percent of persons), half of them lasted for 7.1 months or longer. This estimate was significantly longer than the 6.0 month median duration of noncoverage for the earlier period from 1990 to 1992. Figure 7 shows the distribution of spells without health insurance by spell length. The increase in the final category represents all spells without insurance that had not ended within 2 years.

Education. Attaining a high level of education appears to have a major impact on how long someone goes without health insurance. For example, the median spell duration of 10.0 months without health insurance coverage for those without a high school diploma was longer than the 5.1 months of noncoverage for those with at least 1 year of college. High school (but not college) graduates also had a longer median spell duration of noncoverage (7.2 months) than those with at least 1 year of college. No statistical difference was observed between median spells for high school graduates and nongraduates.

Age and employment status. Generally, comparisons of median spell durations of noncoverage between age groups are not statistically different. It was observed, however, that the median spell duration of 5.1 months without coverage for children less than 18 years of age was much shorter than spells for other age groups. Spell durations for other age groups ranged from 7.1 months for those between the ages of 25 to 34 to 7.7 months for those between 45 and 64. These differences were not significant.

As expected, full-time workers had a shorter median spell duration without health insurance than those unemployed. The median spell durations for these groups were 5.7 months and 7.7 months, respectively.

Race and Hispanic origin. The median spell duration without health insurance of 7.1 months for Blacks was not longer than the 7.0 months for Whites or for Whites, not of Hispanic origin (6.0 months). Persons of Hispanic origin had a median spell duration without health insurance of 7.7 months, which was significantly longer than that of Blacks or Whites.⁹

Residence and region. Central city residents experienced longer spells without health insurance (7.4 months) than those living in the suburbs (5.8 months). The median spell duration of 7.5 months for those living in the South was longer than the 4.7 month median spell

⁹No significant difference was observed between median spell durations by other race or Hispanic origin comparisons.

duration for those in the Midwest. Median spells of noncoverage for other regions were 7.1 months for those living in the Northeast and 6.8 months for those in the West.^{10 11}

¹⁰No significant difference was observed between median spell durations of those residing in other regions.

¹¹For an examination of the dynamics of health insurance for cohorts of privately insured and uninsured persons, see A.C. Monheit and C.L. Schur, *The Dynamics of Health Insurance Loss: A Tale of Two Cohorts*, *Inquiry* 25 (Fall 1988): 315-327 and K. Swartz and T.D. McBride, *Spells Without Health Insurance: Distribution of Durations and Their Link to Point-in-Time Estimates of the Uninsured*, *Inquiry* 27 (Fall 1990): 281-288.

USER COMMENTS

We are interested in your reaction to the usefulness and content of this report. We welcome your recommendations. If you have any suggestions or comments, please send them to:

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Appendix A.

Definitions and Explanations

Population coverage. The estimates in this report are restricted to the civilian noninstitutional resident population of the United States and members of the Armed Forces living off post or with their families on post.

Age. Age classification is based on age at the beginning of the 32-month period.

Race. The population is divided into three groups on the basis of race: White, Black, and “other races.” The last category includes American Indians, Asian/Pacific Islanders, and any other race except White and Black.

Hispanic origin. Persons of Hispanic origin were determined on the basis of a question that asked for self-identification of the person’s origin (or the origin of some other household member) from a “flashcard” listing ethnic origins. Hispanics were those who indicated that their origin was Mexican, Puerto Rican, Cuban, Central or South American, or some other Hispanic origin. It should be noted that persons of Hispanic origin may be of any race. The information on the Hispanic population shown in this report was collected in the 50 States and the District of Columbia, and therefore, does not include residents of Puerto Rico.

Metropolitan areas. The population residing in metropolitan statistical areas (MSA’s) as defined in June 1984 constitutes the metropolitan population. MSA’s are defined by the Office of Management and Budget for use in the presentation of statistics by agencies of the Federal Government. An MSA is a geographic area consisting of a large population nucleus, together with adjacent communities which have a high degree of economic and social integration with that nucleus. The definitions specify a boundary around each large city to include most or all of its suburbs. Entire counties form the MSA building blocks, except in New England where cities and towns are used. The former term SMSA was changed to MSA in 1983. An area qualifies for recognition as an MSA if (1) it includes a Census Bureau-defined urbanized area of at least 50,000 with a total metropolitan population of at least 100,000 (75,000 in New England). In addition to the county containing the main city or urbanized area, an MSA may include other counties having strong commuting ties to the central county. If specified conditions are met, certain large MSA’s are designated as consolidated MSA’s (CMSA’s) and divided into component primary MSA’s (PMSA’s).

Nonmetropolitan areas. The territory outside metropolitan statistical areas is referred to as nonmetropolitan.

Central cities. The largest city in each MSA is always designated a central city. There may be additional central cities if specified requirements, designed to identify places of central character within the MSA, are met. Although the largest central cities are generally included in the title of the MSA, there may be central cities that are not part of the title. The balance of the MSA outside the central city or cities often is regarded as equivalent to “suburban areas.”

Noncentral cities. The territory outside central cities of metropolitan statistical areas but within MSA’s is referred to as noncentral cities or “suburban areas.”

Labor force and employment status. The definitions of labor force and employment status relate to persons 18 years old and older.

Full-time worker. A person was employed full-time in a given month if he or she worked at least 1 week during that month and at least 35 hours during a usual week of employment.

Part-time worker. A person was employed part-time in a given month if he or she worked at least 1 week during that month and less than 35 hours during a usual week of employment.

Unemployed. A person was unemployed in a given month if he or she had no job during the month and spent 1 or more weeks looking for employment or on layoff.

Not in the labor force. A person was not in the labor force in a given month if he or she held no job during the month and spent no time looking or on layoff.

Poverty definition. The poverty definition used in this report is based on the Government’s official definition but was calculated on a monthly basis using the family composition at that time rather than fixing it throughout the year as is done in the Current Population Survey. These data differ from the official figures and are not part of the standard data series on poverty established by Directive 14 from the Office of Management and Budget. Official figures are published annually from the March Current Population Survey in the P60 Series of Current Population Reports.

A person’s poverty status in this report was determined by comparing the sum of the person’s family income each month against the sum of the appropriate monthly poverty

thresholds. If the person's family income (personal income if an unrelated individual) was below the sum of the monthly poverty thresholds, the person was classified as below the poverty level for the year shown.

For further discussion of the poverty definition, see Current Population Reports, Series P60-188, *Income, Poverty, and Valuation of Noncash Benefits: 1993*.

Income-to-poverty ratio. The income-to-poverty ratio used in this report incorporates an adjustment in every month for family size and composition. The poverty threshold for each family is calculated based on the size and composition of that family in each month. For unrelated individuals, individual income is divided by the appropriate one-person-family poverty threshold. In order to obtain the income-to-poverty ratio during a certain period, the family income of a person is summed over each month of that period and divided by the sum of the respective monthly poverty thresholds.

Low-income status. The low-income definition used in this report is based on the Government's official poverty definition. A person's monthly low-income status in this report was determined by comparing the person's family income in a month against the appropriate monthly poverty thresholds (one-twelfth of the annual poverty threshold). If the person's family income was below the monthly poverty thresholds, the person was classified as having low-income for the month.

Public assistance. AFDC or other cash assistance includes payments under the Aid to Families with Dependent Children (AFDC or ADC) Program and payments often categorized as general or public assistance.

General assistance consists of a host of State and local programs to provide cash assistance to needy persons not qualifying for AFDC or Supplemental Security Income (SSI). Eligibility rules vary from State to State, and often from county to county within a State, ranging from aid to mostly unemployable single adults (District of Columbia), to workfare programs, where recipients work in exchange for the assistance (New York).

Persons are considered participants in AFDC or general assistance if they are identified as primary recipients or if they are covered under another persons' allotment.

Medicare. The medicare program is designed to provide medical care for the aged and disabled. The Basic Hospital Insurance Plan (Part A) is designed to provide basic protection against hospital costs and related post-hospital services. This plan also covers many persons under 65 years old who receive Social Security or railroad retirement benefits based on long-term disability. Part A is financed jointly by employers and employees through Social Security payroll deductions. Qualified persons 65 years old and over who are not otherwise eligible for Part A benefits may

pay premiums directly to obtain this coverage. The Medical Insurance Plan (Part B) is a voluntary plan which builds upon the hospital insurance protection provided by the basic plan. It provides insurance protection covering physicians' and surgeons' services and a variety of medical and other health services received either in hospitals or on an ambulatory basis. It is financed through monthly premium payments by each enrollee and subsidized by Federal general revenue funds.

The term "covered" means enrolled in the medicare program. In order to be counted, the person did not necessarily have to receive medical care paid for by medicare.

Medicaid. The medicaid program is designed "to furnish medical assistance on behalf of needy families with dependent children, and of aged, blind, or permanently and totally disabled individuals whose incomes and resources are insufficient to meet the costs of necessary medical services."¹ The program is administered by State agencies through grants from the Health Care Financing Administration of the Department of Health and Human Services. Funding for medical assistance payments consists of a combination of Federal, State, and in some cases, local funds.

The medicaid question on the SIPP attempted to identify all adults who were covered by medicaid. The term "covered" means enrolled in the medicaid program; e.g., had a medicaid medical assistance card or incurred medical bills which were paid for by medicaid. In order to be counted, the person did not have to receive medical care paid for by medicaid.

Spells of noncoverage. Using longitudinal data, it is possible to estimate the distribution of lengths of spells without health insurance coverage for individuals by various characteristics.

Technical note. A technique known as survival analysis was used to derive distributions of spell duration, as well as the resulting estimates of medial spell duration without health insurance. These analyses are based on data for persons observed over a 32-month period of the 1990 and 1991 panels. Only those persons who were present during the entire period were considered. A spell is defined as a period without health insurance coverage, which was preceded by at least 1 month or more with coverage. The spell is observed either until it ends or is right-censored. Since an individual must have completed interviews for all months of the panel in order to be included in the sample, right censoring occurs only if an individual is still participating the last month of the panel. The probability of noncoverage

¹From title XIX of the 1965 Amendments to P.L. 89-97, The Social Security Act, "Grants to States for Medical Assistance Programs," declaration of policy.

in month t given that the person was covered in the beginning of that month, is defined as

$$h(t) = \frac{\text{exits}(t)}{\text{prog}(t) - (\text{rcens}(t)/2)}$$

where $\text{exits}(t)$ denotes the number of spell exits in month t , $\text{prog}(t)$ is the number of spells that were in progress in the beginning of month t , and $\text{rcens}(t)$ is the number of spells which were right-censored in month t .²

The survival rate in month t , which is the probability that a spell lasts longer than t months, can then be written as

$$S(t) = \prod_{k=1}^t (1 - h(k)).$$

The survival function evaluated at t gives the probability that a noncovered entrant is still not covered t time periods later. The median survival time or spell duration M can be estimated by linear interpolation.^{3 4} Let $(t, t+1)$ be the interval such that $S(t) \geq .5$ and $S(t+1) < .5$, therefore,

$$\hat{M} = t + \frac{S(t) - 1/2}{S(t) - S(t+1)}$$

Since a spell must be preceded by at least 1 month of health insurance coverage, left-censored spells of noncoverage are not included in this analysis. Observations are

²It is assumed that a spell exit occurs in month t if no coverage was observed in month t and coverage was observed in month $t + 1$. Also, it is assumed that a spell is exposed to the risk of exiting for an average of one-half of a month before right-censoring occurs.

³Resulting median spell durations are shorter than those based on a sample of spells at a given point in time. Cross-sectional estimates of median spell durations can be upwardly biased since longer spells are more likely to be included in a sample at a point in time than shorter spells.

⁴Lee, E.T. (1980) *Statistical Methods for Survival Data Analysis*, Wadsworth, Inc., Belmont, CA.

left-censored when the beginning of a spell of interest is not observed; that is, a spell began at some time before the reference period.

While dynamic estimates may be unbiased for spells observed at the beginning of a reference period, there remains concern about the deletion of left-censored spells from such analyses. There may be particular characteristics of persons, associated with the experience of very long spells, that precludes their inclusion in the sample. For example, in our analysis, which is restricted to persons in the sample the entire period, selecting spells with observed beginnings leads to a sample without those persons who were without health insurance from the beginning of the panel. Persons with chronically long spells without coverage or persons who were never covered (e.g., those working in an industrial sector that has traditionally not had health insurance benefits) may not be proportionately represented in a sample restricted to spells with observed beginnings. Studies of spells with observed beginnings might result in reasonable estimates of spell distribution and median duration *for such spells with observed beginnings*, but it might result in downward biased estimates of median duration of *all spells*.

Symbols. A dash (—) represents zero or rounds to zero, the symbol “B” means that the base for the derived figure is less than 200,000 and the symbol “X” means not applicable.

Rounding. Percentages are rounded to the nearest tenth of a percent; therefore, the percentages in a distribution do not always add to exactly 100.0 percent. The totals, however, are always shown as 100.0. Moreover, individual figures are rounded to the nearest thousand without being adjusted to group totals, which are independently rounded; percentages are based on the unrounded numbers.

Appendix B.

Source and Accuracy of the Estimates

SOURCE OF DATA

The SIPP universe is the noninstitutionalized resident population living in the United States. This population includes persons living in group quarters, such as dormitories, rooming houses, and religious group dwellings. Not eligible to be in the survey are crew members of merchant vessels, Armed Forces personnel living in military barracks, and institutionalized persons, such as correctional facility inmates and nursing home residents. Also not eligible are U.S. citizens residing abroad. Foreign visitors who work or attend school in this country and their families are eligible; all others are not eligible. With the exceptions noted above, field representatives interview eligible persons who are at least 15 years of age at the time of the interview.

The 1990 and 1991 panel SIPP samples are located in 230 Primary Sampling Units (PSU's) each consisting of a county or a group of contiguous counties. Within these PSU's, we systematically selected expected clusters of two living quarters (LQ's) from lists of addresses prepared for the 1980 decennial census to form the bulk of the sample. To account for LQ's built within each of the sample areas after the 1980 census, we selected a sample containing clusters of four LQ's from permits issued for construction of residential LQ's up until shortly before the beginning of the panel.

In jurisdictions that have incomplete addresses or don't issue building permits, we sampled small land areas, listed expected clusters of four LQ's, and then subsampled. In addition, we selected a sample of LQ's from a supplemental frame that included LQ's identified as missed in the 1980 census.

The 1990 panel differs from other panels as a result of oversampling for low income households. The panel contains an oversample of Black-headed households, Hispanic-headed households and female-headed family households with no spouse present and living with relatives.

The first interviews occurred during February, March, April, or May of the panel year. Interviews for approximately one-fourth of the sample took place in each of these months creating four subsamples. The four subsamples distribute interviewing workloads and are called rotation groups. One round of interviewing for the sample covering all four rotations is called a wave. For the remainder of the panel, interviews for each person occurred every 4 months. At each interview the reference period was the 4 months preceding the interview month.

Occupants of about 93 percent of all eligible living quarters participated in the first interview of the panel. For later interviews, field representatives interviewed only original sample persons (those in wave 1 sample households and interviewed in wave 1) and persons living with them. The Census Bureau automatically designated all first wave noninterviewed households as noninterviews for all subsequent interviews.

For the 1990 panel, field representatives conducted personal interviews in the first through sixth waves only. For the 1991 panel, field representatives conducted personal interviews for the first, second, third, and sixth waves only. The remaining interviews for 1990 and 1991 panels were designated telephone interviews. Even though headquarters designates a 1990+ interview as personal or telephone, the field representatives may conduct the other type depending on the circumstances of a case.

For personal interviews, we followed original sample persons if they moved to a new address, unless the new address was more than 100 miles from a SIPP sample area. If the original sample persons moved farther than 100 miles from a SIPP sample area, we attempted telephone interviews. When original sample persons moved to remote parts of the country and were unreachable by telephone, moved without leaving a forwarding address, or refused the interview, additional noninterviews resulted.

We classified a person as interviewed or noninterviewed for the entire panel and both calendar years based on the following definitions. Interviewed sample persons are—

- those for whom self or proxy response was obtained for each reference month of all eight interviews for the 1990 and 1991 panels, and all three interviews for each calendar year; or
- those for whom self or proxy response was obtained for the first reference month of the interview period and for each later reference month until they were known to have died or moved to an ineligible address (foreign living quarters, institutions, or military barracks).

Noninterviewed persons result when neither a self nor proxy response is obtainable for one or more reference months of either the eight interviews for the panel or the three interviews for each calendar year (but not because they died or moved to an ineligible address).

Details on interview-status classification are in "Weighting of Persons for SIPP Longitudinal Tabulations" (paper by Judkins, Hubble, Dorsch, McMillen, and Ernst in the

1984 *Proceedings of the Survey Research Methods Section, American Statistical Association*). Details on patterns of nonresponse are in "Weighting Adjustment for Partial Nonresponse in the 1984 SIPP Panel" (paper by Lepkowski, Kalton, and Kasprzyk in the 1989 *Proceedings of the Survey Research Methods Section, American Statistical Association*).

Table B-1. **Sample Size by Panel or Calendar Year and Interview Status (Persons)**

Panel or calendar year	Initially eligible	Classified as interviewed	Person nonresponse rate (percent)
90 panel.....	61 700	43 700	29
90 calendar year	61 700	49 600	20
91 calendar year	67 400	47 500	30
91 panel.....	40 800	30 600	25
91 calendar year	40 800	33 200	19
92 calendar year	43 200	32 000	26

Some respondents did not respond to some of the questions. Therefore, the overall nonresponse rate for some items, especially sensitive income and money related items, is higher than the person nonresponse rate. For more discussion of nonresponse see the *Quality Profile for the Survey of Income and Program Participation, May 1990*, by T. Jabine, K. King, and R. Petroni, available from Customer Services, Data Users Services Division (301-457-1305).

ESTIMATION

We used several stages of weight adjustments in the estimation procedure to derive the SIPP longitudinal person weights. We gave each person a base weight equal to the inverse of his/her probability of selection. We applied two noninterview adjustment factors. One adjusted the weights of interviewed persons in interviewed households to account for households which were eligible for the sample but which field representatives could not interview at the first interview. The second compensated for person noninterviews occurring in subsequent interviews. The Census Bureau used complex techniques to adjust the weights for nonresponse, but the success of these techniques in avoiding bias is unknown. For more detail on noninterview adjustment for longitudinal estimates see "Nonresponse Adjustment Methods for Demographic Surveys at the U.S. Bureau of the Census, November 1988", Working paper 8823, by R. Singh and R. Petroni.

We applied another factor to each interviewed person's weight to account for the SIPP sample areas not having the same population distribution as the strata they are from.

We performed an additional stage of adjustment to longitudinal person weights to reduce the mean square error of the survey estimates. We accomplished this by ratio adjusting the sample estimates to agree with monthly Current Population Survey (CPS) type estimates of the civilian (and some military) noninstitutional population of the United States at the national level by demographic characteristics including age, sex, and race, as of the specified control date. For the 1990 Panel, the control date is March 1, 1990. The 1990 calendar year and 1991 calendar year control dates are January 1, 1990, and January 1, 1991, respectively. For the 1991 Panel, the control date is March 1, 1991. The 1991 calendar year and 1992 calendar year control dates are January 1, 1991, and January 1, 1992, respectively. The Census Bureau brought CPS estimates by age, sex, and race into agreement with adjusted estimates from the 1980 decennial census. Adjustments to the 1980 decennial census estimates reflect births, deaths, immigration, emigration, and changes in the Armed Forces since 1980. Also, we controlled SIPP estimates to independent Hispanic controls.

ACCURACY OF ESTIMATES

We base SIPP estimates on a sample. The sample estimates may differ somewhat from the values obtained from administering a complete census using the same questionnaire, instructions, and enumerators. The difference occurs because a sample survey estimate is subject to two types of errors: nonsampling and sampling. We can provide estimates of the magnitude of the SIPP sampling error, but this is not true of nonsampling error. The next few sections describe SIPP nonsampling error sources, followed by a discussion of sampling error, its estimation, and its use in data analysis.

Nonsampling variability. We attribute nonsampling errors to many sources; they include:

- Inability to obtain information about all cases in the sample
- Definitional difficulties
- Differences in the interpretation of questions
- Inability or unwillingness on the part of the respondents to provide correct information
- Inability to recall information
- Errors made in collection (e.g. recording or coding the data)
- Errors made in processing the data
- Errors made in estimating values for missing data
- Biases resulting from the differing recall periods caused by the interviewing pattern used
- Undercoverage

Table B-2. 1992 CPS Coverage Ratios

Age	Non-Black		Black		All Persons		
	Males	Females	Males	Females	Males	Females	Total
0-14.....	0.963	0.965	0.927	0.926	0.957	0.959	0.958
15.....	0.962	0.949	0.899	0.919	0.952	0.944	0.948
16.....	0.969	0.936	0.923	0.907	0.962	0.932	0.947
17.....	0.981	0.975	0.945	0.862	0.975	0.957	0.966
18.....	0.939	0.926	0.883	0.846	0.930	0.913	0.922
19.....	0.860	0.872	0.754	0.801	0.844	0.861	0.853
20-24.....	0.913	0.927	0.734	0.832	0.889	0.913	0.901
25-26.....	0.927	0.940	0.688	0.877	0.897	0.931	0.914
27-29.....	0.910	0.954	0.707	0.864	0.885	0.941	0.914
30-34.....	0.893	0.948	0.691	0.883	0.870	0.939	0.905
35-39.....	0.910	0.949	0.763	0.899	0.895	0.942	0.919
40-44.....	0.929	0.951	0.824	0.906	0.919	0.946	0.933
45-49.....	0.956	0.966	0.903	0.956	0.951	0.965	0.958
50-54.....	0.940	0.961	0.807	0.877	0.927	0.951	0.940
55-59.....	0.944	0.941	0.826	0.825	0.932	0.928	0.930
60-62.....	0.965	0.956	0.792	0.850	0.948	0.944	0.946
63-64.....	0.905	0.907	0.669	0.872	0.884	0.903	0.894
65-67.....	0.935	0.979	0.783	0.875	0.921	0.969	0.947
68-69.....	0.925	0.942	0.789	0.831	0.913	0.931	0.923
70-74.....	0.926	0.993	0.856	1.014	0.920	0.995	0.962
75-99.....	0.977	0.989	0.764	0.912	0.961	0.983	0.975
15+.....	0.928	0.953	0.782	0.883	0.912	0.944	0.929
0+.....	0.936	0.955	0.827	0.895	0.923	0.947	0.935

We used quality control and edit procedures to reduce errors made by respondents, coders, and interviewers. More detailed discussions of the existence and control of nonsampling errors in the SIPP are in the SIPP Quality Profile.

Undercoverage in SIPP resulted from missed living quarters and missed persons within sample households. It is known that undercoverage varies with age, race, and sex. Generally, undercoverage is larger for males than for females and larger for Blacks than for non-Blacks. Ratio estimation to independent age-race-sex population controls partially corrects for the bias due to survey undercoverage. However, biases exist in the estimates when persons in missed households or missed persons in interviewed households have characteristics different from those of interviewed persons in the same age-race-sex group. Further, we didn't adjust the independent population controls for undercoverage in the census.

A common measure of survey coverage is the coverage ratio, the estimated population before ratio adjustment divided by the independent population control. Table B-2 shows CPS coverage ratios for age-sex-race groups for 1992. The CPS coverage ratios can exhibit some variability from month to month, but these are a typical set of coverage ratios. Other Census Bureau household surveys like the SIPP experience similar coverage.

Comparability with other estimates. Exercise caution when comparing data from this report with data from other SIPP publications or with data from other surveys. Comparability problems are from varying seasonal patterns for many characteristics, different nonsampling errors, and

different concepts and procedures. Refer to the SIPP Quality Profile for known differences with data from other sources and further discussion.

Sampling variability. Standard errors indicate the magnitude of the sampling error. They also partially measure the effect of some nonsampling errors in response and enumeration, but do not measure any systematic biases in the data. The standard errors mostly measure the variations that occurred by chance because we surveyed a sample rather than the entire population.

USES AND COMPUTATION OF STANDARD ERRORS

Confidence intervals. The sample estimate and its standard error enable one to construct confidence intervals, ranges that would include the average result of all possible samples with a known probability. For example, if we selected all possible samples and surveyed each of these under essentially the same conditions and with the same sample design, and if we calculated an estimate and its standard error from each sample, then:

1. Approximately 90 percent of the intervals from 1.645 standard errors below the estimate to 1.645 standard errors above the estimate would include the average result of all possible samples.
2. Approximately 95 percent of the intervals from 1.960 standard errors below the estimate to 1.960 standard errors above the estimate would include the average result of all possible samples.

The average estimate derived from all possible samples is or is not contained in any particular computed interval. However, for a particular sample, one can say with a specified confidence that the confidence interval includes the average estimate derived from all possible samples.

Hypothesis testing. One may also use standard errors for hypothesis testing. Hypothesis testing is a procedure for distinguishing between population characteristics using sample estimates. The most common type of hypothesis tested is 1) the population characteristics are identical versus 2) they are different. One can perform tests at various levels of significance, where a level of significance is the probability of concluding that the characteristics are different when, in fact, they are identical.

Unless noted otherwise, all statements of comparison in the report passed a hypothesis test at the 0.10 level of significance or better. This means that, for differences cited in the report, the estimated absolute difference between parameters is greater than 1.645 times the standard error of the difference.

To perform the most common test, compute the difference $X_A - X_B$, where X_A and X_B are sample estimates of the characteristics of interest. A later section explains how to derive an estimate of the standard error of the difference $X_A - X_B$. Let that standard error be s_{DIFF} . If $X_A - X_B$ is between -1.645 times s_{DIFF} and $+1.645$ times s_{DIFF} , no conclusion about the characteristics is justified at the 10 percent significance level. If, on the other hand, $X_A - X_B$ is smaller than -1.645 times s_{DIFF} or larger than $+1.645$ times s_{DIFF} , the observed difference is significant at the 10 percent level. In this event, it is commonly accepted practice to say that the characteristics are different. Of course, sometimes this conclusion will be wrong. When the characteristics are, in fact, the same, there is a 10 percent chance of concluding that they are different.

Note that as we perform more tests, more erroneous significant differences will occur. For example, at the 10 percent significance level, if we perform 100 independent hypothesis tests in which there are no real differences, it is likely that about 10 erroneous differences will occur. Therefore, interpret the significance of any single test cautiously.

Note concerning small estimates and small differences. We show summary measures in the report only when the base is 200,000 or greater. Because of the large standard errors involved, there is little chance that estimates will reveal useful information when computed on a base smaller than 200,000. Also, nonsampling error in one or more of the small number of cases providing the estimate can cause large relative error in that particular estimate. We show estimated numbers, however, even though the relative standard errors of these numbers are larger than those for the corresponding percentages. We provide smaller estimates primarily to permit such combinations of the categories to serve each user's needs.

Therefore, be careful in the interpretation of small differences since even a small amount of nonsampling error can cause a borderline difference to appear significant or not, thus distorting a seemingly valid hypothesis test.

Standard error parameters and tables and their use. Most SIPP estimates have greater standard errors than those obtained through a simple random sample because we sampled clusters of living quarters for the SIPP. To derive standard errors at a moderate cost and applicable to a wide variety of estimates, we made a number of approximations. We grouped estimates with similar standard error behavior and developed two parameters (denoted "a" and "b") to approximate the standard error behavior of each group of estimates. Because the actual standard error behavior was not identical for all estimates within a group, the standard errors we computed from these parameters provide an indication of the order of magnitude of the standard error for any specific estimate. These "a" and "b" parameters vary by characteristic and by demographic subgroup to which the estimate applies. These tables provide the "a" and "b" parameters which are used for the following panel estimates:

- Table B-3: 1991 Longitudinal
- Table B-4: 1990 Longitudinal

For users who wish further simplification, we also provide general standard errors in tables B-5 and B-6. Note that you need to adjust these standard errors by a factor from tables B-3 and B-4. The standard errors resulting from this simplified approach are less accurate. Methods for using these parameters and tables for computation of standard errors are given in the following sections.

Standard errors of estimated numbers. There are two ways to compute the approximate standard error, s_x , of an estimated number shown in this report. The first uses the formula

$$s_x = fs \quad (1)$$

where f is a factor from tables B-3 and B-4, and s is the standard error of the estimate obtained by interpolation from table B-5. Alternatively, approximate s_x using the formula,

$$s_x = \sqrt{ax^2 + bx} \quad (2)$$

from which we calculated the standard errors in table B-5. Here x is the size of the estimate and a and b are the parameters in tables B-3 and B-4 associated with the particular type of characteristic. Use of formula 2 will provide more accurate results than the use of formula 1. When calculating standard errors for numbers from crosstabulations involving different characteristics, use the factor or set of parameters for the characteristic which will give the largest standard error.

Illustration. SIPP estimates given in table A of the report show that 18,001,000 persons were uninsured in 1992. The appropriate “a” and “b” parameters are obtained from table B-3. They are $a = -0.0001294$ and $b = 31,174$, respectively. Using formula (2), the approximated standard error is

$$\sqrt{(-0.0001294)(18,001,000)^2 + (31,174)(18,001,000)} = 721,000$$

The 90-percent confidence interval as shown by the data is from 16,816,000 to 19,186,000. Therefore, a conclusion that the average derived from all possible samples lies within a range computed in this way would be correct for roughly 90-percent of all samples.

Using formula (1), the appropriate “f” factor ($f=0.98$) from table B-3 and the standard error of the estimate by interpolation using table B-5, the approximate standard error is

$$s_x (0.98)(734,000) = 719,000$$

The 90-percent confidence interval as shown by the data is from 16,818,000 to 19,184,000.

Standard errors of estimated percentages. The reliability of an estimated percentage, computed using sample data for both numerator and denominator, depends on the size of the percentage and its base. When the numerator and denominator of the percentage have different parameters, use the parameter (or appropriate factor) from tables B-3 and B-4 indicated by the numerator.

Calculate the approximate standard error, $s_{(x,p)}$, of an estimated percentage p using the formula

$$s_{(x,p)} = fs \quad (3)$$

where p is the percentage of persons/families/households with a particular characteristic such as the percent of persons owning their own homes.

In this formula, f is the appropriate “f” factor from tables B-3 and B-4, and s is the standard error of the estimate obtained by interpolation from table B-6.

Alternatively, approximate it by the formula:

$$s_{(x,p)} = \sqrt{\frac{b}{x}(p)(100 - p)} \quad (4)$$

from which we calculated the standard errors in table B-6. Here x is the total number of persons, families, households, or unrelated individuals in the base of the percentage, p is the percentage ($0 \leq p \leq 100$), and b is the “b” parameter in tables B-3 and B-4 associated with the characteristic in the numerator of the percentage. Use of this formula will give more accurate results than use of formula (3) above.

Illustration. Table A of the report shows that 72.1 percent of Blacks were covered by health insurance for 12 months in calendar year 1992. The base of this percentage (x) is 31,237,000. The appropriate “b” parameter and “f” factor from table B-3 and the appropriate general standard error found by interpolation from table B-6 are

$$b = 11,533, \quad f = 0.60, \quad s = 1.40$$

Using formula (3), the approximate standard error is

$$s_{(x,p)} = (0.60)(1.40) = 0.8\%.$$

Using formula (4), the approximate standard error is

$$s_{(x,p)} = \sqrt{\frac{11,533}{31,237,000} 72.1\%(100\% - 72.1\%)} = 0.9\%.$$

The 90-percent confidence interval shown by these data is 70.7 to 73.5 percent.

Standard error of a difference. The standard error of a difference between two sample estimates, x and y , is approximately equal to

$$s_{(x-y)} = \sqrt{s_x^2 + s_y^2 - 2rs_x s_y} \quad (5)$$

where s_x and s_y are the standard errors of the estimates x and y and r is the correlation coefficient between the characteristics estimated by x and y . The estimates can be numbers, averages, percents, ratios, etc. Underestimates or overestimates of standard error of differences result if the estimated correlation coefficient is overestimated or underestimated, respectively. In this report, we assume r is 0.

Illustration. Table B of the report shows 28.3 percent of males and 24.7 percent of females received health insurance coverage for less than 32 months of the 1991 panel. The bases of the percentages for males and females are 117,061,000 and 124,894,000, respectively. The standard errors for these percentages are computed using formula 4, to be 1.2 percent and 1.1 percent. Assuming that these two estimates are not correlated, the standard error of the estimated difference of 3.6 percentage points is

$$s_{(x-y)} = \sqrt{(1.2\%)^2 + (1.1\%)^2} = 1.7\%$$

Suppose that it is desired to test at the 10-percent significance level whether the percentage of males who received health insurance coverage for less than 32 months was different than the percentage of females who received health insurance coverage for less than 32 months. To perform the test, compare the difference of 3.6 percent to the product $1.645 \times 1.7 = 2.8$ percent. Since the difference is greater than 1.645 times the standard error of the difference, the data show that the two sex groups are significantly different at the 10-percent significance level.

Table B-3. **SIPP Generalized Variance Parameters for Estimates Using the 1991 Longitudinal File**

Characteristics of persons	1991 panel weights			1991 calendar weights			1992 calendar weights		
	a	b	f	a	b	f	a	b	f
TOTAL OR WHITE									
All others									
Both sexes	-0.0001345	32 413	1.00	-0.0001254	30 228	0.97	-0.0001294	31 174	0.98
Male	-0.0002768	32 413		-0.0002582	30 228		-0.0002663	31 174	
Female	-0.0002613	32 413		-0.0002437	30 228		-0.0002513	31 174	
Black									
All others									
Both sexes	-0.0004081	11 992	0.61	-0.0003806	11 183	0.59	-0.0003925	11 533	0.60

Table B-4. **SIPP Generalized Variance Parameters for Estimates Using the 1990 Longitudinal File**

Characteristics of persons	1990 panel weights			1990 calendar weights		
	a	b	f	a	b	f
TOTAL						
All others						
Both sexes	-0.0000985	22 724	0.84	-0.0000882	20 356	0.79
Male	-0.0002038	22 724		-0.0001826	20 356	
Female	-0.0001908	22 724		-0.0001709	20 356	
White						
All others						
Both sexes	-0.0001093	25 185	0.88	-0.0000979	22 560	0.83
Black						
All others						
Both sexes	-0.0002202	6 076	0.43	-0.0001972	5 443	0.41
Hispanic						
All others						
Both sexes	-0.0002931	6 076	0.43	-0.0002626	5 443	0.41

Table B-5. **Standard Errors of Estimated Numbers of Persons**

(Numbers in thousands)

Size of estimate	Standard error	Size of estimate	Standard error
200	80	26,000	867
300	99	30,000	923
600	139	50,000	1 133
1,000	180	80,000	1 316
2,000	254	100,000	1 377
3,000	310	130,000	1 393
5,000	398	140,000	1 379
8,000	501	150,000	1 355
11,000	583	200,000	1 050
13,000	631	220,000	788
15,000	675	230,000	583
17,000	716	235,000	435
22,000	805	240,000	179

Table B-6. **Standard Errors of Estimated Percentages of Persons**

Base of estimated percentage (thousands)	Estimated percentages					
	1 or 99	2 or 98	5 or 95	10 or 90	25 or 75	50
200	4.0	5.6	8.8	12.1	17.4	20.1
300	3.3	4.6	7.2	9.9	14.2	16.4
600	2.3	3.3	5.1	7.0	10.1	11.6
1,000	1.8	2.5	3.9	5.4	7.8	9.0
2,000	1.3	1.8	2.8	3.8	5.5	6.4
3,000	1.0	1.5	2.3	3.1	4.5	5.2
5,000	0.8	1.1	1.8	2.4	3.5	4.0
8,000	0.6	0.9	1.4	1.9	2.8	3.2
11,000	0.5	0.8	1.2	1.6	2.4	2.7
13,000	0.5	0.7	1.1	1.5	2.2	2.5
15,000	0.5	0.7	1.0	1.4	2.0	2.3
17,000	0.4	0.6	1.0	1.3	1.9	2.2
22,000	0.4	0.5	0.8	1.2	1.7	1.9
26,000	0.4	0.5	0.8	1.1	1.5	1.8
30,000	0.3	0.5	0.7	1.0	1.4	1.6
50,000	0.3	0.4	0.6	0.8	1.1	1.3
80,000	0.2	0.3	0.4	0.6	0.9	1.0
100,000	0.2	0.3	0.4	0.5	0.8	0.9
130,000	0.2	0.2	0.3	0.5	0.7	0.8
140,000	0.2	0.2	0.3	0.5	0.7	0.8
150,000	0.1	0.2	0.3	0.4	0.6	0.7
200,000	0.1	0.2	0.3	0.4	0.6	0.6
220,000	0.1	0.2	0.3	0.4	0.5	0.6
230,000	0.1	0.2	0.3	0.4	0.5	0.6
235,000	0.1	0.2	0.3	0.4	0.5	0.6
240,000	0.1	0.2	0.3	0.3	0.5	0.6